Gwydyr House,
Whitehall,
17th July, 1935.

METEOROLOGICAL COMMITTEE

ONE HUNDRED AND FIFTY FIRST MEETING.

PRESENT:-

Sir Henry Lyons	(In the Chair)
The Director	Lt.Col.Rossiter (representing Col.Macrae)
Prof. Chapman	Mr. Rose
Capt. Ellery	Prof. Sampson

Mr. F. Entwistle. (Secretary)

1266. The minutes of the last meeting, held on 13th March, 1935, were confirmed and signed.

Apologies for absence were received from Mr. Flood, the Hydrographer, Mr. Knight, Sir Thomas Middleton and Mr. Webster.

The Chairman, on behalf of the Committee, congratulated the Director on the honour of K.C.B. which His Majesty had been graciously pleased to confer on him in the Jubilee Honours List, with which he had since been invested.

1267. Edinburgh Meteorological Committee.

The minutes of the meeting of the Edinburgh Meteorological Committee held on 5th June, 1935, were laid on the table.

1268. Annual Report for the year ended 31st March, 1935.

The Annual Report, which had previously been circulated in galley proof, was adopted with some minor corrections.

1269. Report on present position of Meteorological Office Staff Reorganisation.

The Director stated that, following the report of the Meteorological Committee on the employment of Technical Assistants on forecasting duties, the staff side had raised no objection to proceeding with the reorganisation, provided that certain points of detail were left open for discussion as they arose. The assimilation of the staff to the new grades had now been effected. As was inevitable in a large-scale reorganisation of this kind there were a few members of the staff who felt that they had not received the treatment they deserved, and had registered protests, which were now being examined by the Establishments Division. So far as he could tell the majority of the staff, however, were well satisfied with the reorganisation.

There/

There was little doubt that in both the professional and assistant classes the prospects for promotion were brighter than before and the Meteorological office now offered a definite career to anyone entering the service.

Copies of the assimilation arrangements were circulated.

The Chairman expressed the view that the reorganisation was a satisfactory settlement of a very difficult problem which had never before been undertaken so far as the Meteorological Office staff were concerned.

1270. Conference of Empire Meteorologists, 1935.

The Director reported that the arrangements for the Conference of Empire Meteorologists were now practically completed. 30 delegates were expected to attend, representing 26 Colonies or Dominions. It was a matter for gratification that all the countries which had organised meteorological services were being represented by the Directors of those services.

The arrangements for the meetings and for the social side of the Conference were detailed for the information of the Committee.

1271. Publication of Normals of Upper Wind, Cloud and Visibility.

The Director stated that, from the point of view of aviation, it was becoming increasingly important to have available frequency tables covering a period of years relating to upper wind, cloud and visibility at stations in the British Isles. Monthly frequency tables of these elements have been published for some years in a form recommended by the International Commission for Air Navigation. Similar monthly frequency tables were published by twelve other countries. Observations were now available from stations in the British Isles for varying periods, in some cases fifteen years, and it was felt that the time had come when "normals" of the elements could be usefully completed and published.

Copies of the Monthly Frequency Tables were circulated.

The Committee agreed that normals of upper wind, cloud and visibility should be published.

1272. Director's Report.

(a) Tour by Mr. Entwistle to 'Iraq, Middle East and British East Africa in connection with development of Meteorological organisation on Empire Air Routes.

The Director referred to his statement at the last meeting in which he outlined the Government's proposals for the development of Empire air communications with a view to all first class postal matter within the Empire being conveyed by air. These proposals involved the speeding up of the air services and the introduction of night flying. A considerable development of the ground organisation along the routes was necessary before this could take place. An Air Ministry mission had left England in May, to visit the parts of the Empire concerned, in order to discuss the extensions of ground organisation which were required and Mr. Entwistle was attached to the mission as meteorological adviser.

At the request of the Chairman, the Secretary gave a brief account of his tour and outlined the developments in meteorological services which, it was anticipated, would result in 'Iraq, Palestine, Egypt, British East Africa and the Sudan.

(b) Training of Meteorological Section, R.A.F. Reserve at Cranwell, May 1935.

The Secretary reported that 4 officers and 27 N.C.O's and airmen had attended for training. The course had followed the lines adopted in previous years but more time had been devoted to purely meteorological training and the opportunity had been taken to investigate the wind currents over a ridge. The service training included instruction in fire fighting, hygiene and anti-gas drill.

(c) Scheme for broadcasting weather reports for aviation.

The Director referred to his report on this subject at the last meeting and stated that the broadcasting of weather reports and forecasts in plain language from the new station at Borough Hill, Northamptonshire, commenced on the 10th July. The microphone was installed in the Forecast Division of the Meteorological Office, from which the information was broadcast. Owing to unforseen delay in the development of the machinery for the rapid collection of reports at the Air Ministry, the full programme was not yet in operation, the schedule of reports previously broadcast from Heston being still in force.

(d) Meteorolgical Exhibit at Highland Agricultural Show,
Aberdeen, June 1935.

The Director reported that a meteorological exhibit had been arranged at the Highland Agricultural Show at Aberdeen. A growing interest was reported in these exhibits.

Gwydyr House,
Whitehall,
13th November, 1935.

METEOROLOGICAL COMMITTEE

ONE HUNDRED AND FIFTY SECOND MEETING.

PRESENT:-

Sir Henry Lyons	(In the Chair)
The Director	Colonel Macrae
Prof. Chapman	Sir Thomas Middleton
Capt. Ellery	Mr. Rose
Mr. Flood	Prof. Sampson
The Hydrographer	Mr. Webster
Mr. Knight	

Miss D.G. Chambers (Acting Secretary).

1273. The minutes of the 151st meeting, held on 17th July, 1935, were confirmed and signed.

1274 **Estimates for 1936-7**

The sketch estimates for 1936, given below, were circulated, showing an increase of £19,000 over the figures for 1935. The Director explained the reasons for the increase as follows:-

9 A and B - Salaries.

An increase of £11,500 was due to:-

(a) Reorganisation of staff of the office and outstations on the basis of the Report of the Carpenter Committee.

(b) Additional staff for new Stations in connexion with internal and Empire air lines.

(c) Normal increments and restoration of emergency reductions.

9 C 2 - Travelling.

An increase of £700 had been allowed to cover the cost of additional overseas postings which are anticipated in 1936.

9 D 1 - Instruments and Equipment.

This sub-head showed an increase of £5,500 to provide the initial equipment of new meteorological stations at home, abroad, and in H.M. Ships, and the necessary consumable stores and replacements for the increased service.

9 D 2 - Research.

An increase of £500 was necessary to cover fully the special work to be done in connexion with Air Defence.

9 E - Works, Maintenance and Rents.

New offices would be required at Aldergrove, Mount Batten and Upper Heyford and probably also at Lee-on-Solent. Provision was also made for installing electric light and power at the Observatory at Eskdalemuir, the supply to be taken from the new overhead lines now in course of erection. A sum of £2000 had been included for ground organisation which might be necessary for Empire Air Routes.

Appropriations-in-Aid.

The normal income from the Royal Society was anticipated and little change under the other sub-heads.

METEOROLOGICAL OFFICE.
ESTIMATES (SKETCH) 1936.

VOTE 9 SUBHEADS A-H.

VOTE 9	SERVICE	1936	1935
	Expenditure		
A	Salaries and allowances: Meteorological Office	60,000	52,000
B	Outstations and Observatories	78,000	74,500
C 1	Fuel and Light	400	400
2	Transport	5,000	4,300
D 1	Instruments, Stores and Equipment	16,000	10,500
2	Research	2,500	2,000
E	Works and Rents	7,500	7,000
F	Telegrams and Payments to Observers	19,100	18,800
G	Superannuation	1,000	1,000
		£189,500	£170,500
	Appropriations-in-Aid		
H 1	Royal Society	500	1,000
2	Sale of Instruments	5,000	5,000
3	D.W.R's, Fees, etc.	3,000	2,700
4	From Navy and Army Votes	7,000	6,800
		£15,500	£15,500
	Net	£174,000	£155,000

The Director also described to the Committee in some detail the demands which were at present being made on the Office by Civil Aviation, on account of the new internal air lines which were being established all over the country, and by the Royal Air Force by reason of the large expansion now being undertaken. With regard to Civil Aviation a distributive station had been established at Manchester in 1933 and the needs of the airport at Glasgow were being met by the station at Abbotsinch. An application had already gone to the Treasury for sanction for the establishment of a station at Bristol and a request had been received in the Air Ministry for a station at Inverness.

To satisfy the requirements of the expanding Royal Air Force a scheme was under discussion which divided the aerodromes into groups. The proposal was to have a central station in each group with a professional forecaster in charge from which forecasts could be obtained by the surrounding aerodromes. At the latter there would be assistant forecasters who would draw synoptic charts and be able to explain them to the pilots. The proposals included the use of teleprinters, instead of wireless, as the means of communication between the stations.

It was essential that the demands for both sides of aviation should be considered together and the Director said that the question was being examined with a view to keeping the number of personnel as low as possible. In the estimates for 1936 a small amount had been allowed for development along the old lines.

Professor Chapman wished to know what steps had been taken to carry out the recommendations of the Sub-Committee which met in December 1934 with regard to research in the office.

The Director said that the Treasury had sanctioned an increase of 10% of the staff to provide a pool which would eventually be used for research. At present, however, the pool was required for training purposes, and he thought that it might be two years before the extra staff could be used for the purpose for which it was intended. He pointed out that permanent appointments were not filled by drawing on the pool staff; an application to the Treasury for an increase in establishment was made. Mr. Webster explained the difficulty of the present position which would not be eased until trained men were available. A number of appointments had already been made.

Professor Chapman asked if any steps were being taken to encourage a greater supply of suitable men from the Universities and the Director said that University Appointments Boards were informed when vacancies occurred. Judging by the number of applicants for the vacancies recently advertised there was no dearth of suitable men.

1275. Invitation to Dr. J. Bjerknes.

The Director reminded the Committee of the visit of Dr. Bjerknes, of the Norwegian Meteorological Service, to the office ten years ago when he lectured to the staff on the methods of forecasting which had been developed in Norway during and after the war. Since then Dr. Bjerknes had been put in charge of the Meteorological Section of the Geophysical Institute at Bergen where further great advances had been made.

The Director had contemplated sending the Superintendent of the Forecast and Aviation Service to Bergen for a course of training under Dr. Bjerknes. Considering it more economical, however, that a member of the Bergen Institute should come to England to instruct the staff, he had sent a tentative enquiry to Dr. Bjerknes. In reply, Dr. Bjerknes had expressed his willingness to come to London himself, for five months, for a lump sum of £500 the amount which he received for a six months stay on the previous occasion. The Director considered this a generous offer and an application had been sent to the Treasury for concurrence. Their sanction had just been received.

The Committee approved the proposal.

276. Second Meteor Flight.

The Director explained to the Committee the importance of observations from great heights for forecasting purposes and stated that the data obtained at Duxford had been of incalculable value. There was a growing need for such information since blind flying - which was now undertaken to an increasing extent by both civil and service aeroplanes - demanded a knowledge of the existence and whereabouts of fronts. The Committee investigating protection against air attack required the data also. He proposed, therefore, to ask for a second Meteor Flight in Ireland. Asked whether the flight might not be located in Scotland the Director said that it was desirable to have the ascents made as far west as possible, also he thought that Scotland would be dangerous as so many forced landings had to be made by the meteor flight.

Mr. Knight asked if the possibility of using civil aeroplanes for the purpose had been considered. Mr. Webster thought that neither civil pilots nor civil aeroplanes would be able to reach the heights required.

The Committee concurred in the Director's proposal.

277. Unification of the Marine and Naval Divisions.

The Director reminded the Committee that in the re-organisation of the office on the lines of the Carpenter Report the Divisions of the office had been amalgamated in pairs with a Principal Technical Officer in charge of each new Division. Difficulties had arisen in the unification of the two marine divisions and it had not been possible to decide whether the unified division should be in charge of a Naval Officer, an Officer of the Merchant Navy or a scientist. A conference had been held of representatives of the Admiralty, the Board of Trade and the Air Ministry, but no conclusion being reached it had been left to the Hydrographer and himself to find a solution of the problem. He further explained that a good deal of purely naval administration was now being done in the Meteorological Office, and it was necessary to discover a means of separating this from the meteorological work while ensuring that unity of control was maintained. The Admiralty had expressed the view that the Naval Meteorological Division should again become part of that Department, and the present emergency had strengthened that view. In examining that possibility the Director had taken into consideration two essentials:

(a) that the meteorological services rendered to the Admiralty should be the best obtainable:

and (b) that for the good of the country there should be only one meteorological service.

No solution to the problem had yet been found.

The Hydrographer had no more to add except that he and the Director were beginning to approach agreement. The Admiralty did not wish to establish a separate meteorological service but were anxious that certain work which they required should be despatched more quickly than the present system allowed.

The Director said that there was no immediate hurry to find a solution of the problem since nothing of a drastic nature would be done while the present Superintendents remained.

1278. Empire Air Mail Scheme.

The Director said that since Captain Entwistle gave particulars of his journey to Africa at the last meeting further developments had taken place. An air line between the British Isles and Newfoundland was under discussion, the terminal aerodrome on this side of the Atlantic to be in Ireland. Captain Entwistle had left England in October for Newfoundland to make preliminary inquiries regarding meteorological facilities there, and he had now joined the Air Ministry mission which was in conference with the Canadian authorities at Ottawa. If the proposed scheme were carried through, complete meteorological services at both terminal aerodromes would be required with an establishment of six professional officers, two of whom would be Senior Technical Officers, and the Treasury had already samctioned this establishment. Much investigational work would be required before the actual service began and as soon as Capt. Entwistle returned to London, the training of about six Officers for this work would be commenced. It was possible that experimental flights would be made in 1936 and it was hoped that the regular service would be inaugurated in 1937.

1279. Extension of Dr. Whipple's Service.

The Director reported that Dr. Whipple would reach the retiring age of 60 on 17th March, 1936. He pointed out that in view of the present staff difficulties it was very undesirable to lose a senior officer, and with the approval of the Committee he proposed to ask the Air Ministry for Dr. Whipple's services to be retained for one year from 17th March, 1936.

Professor Chapman strongly supported the recommendation on the grounds of the valuable scientific work in which Dr. Whipple was engaged, and the Committee approved the proposal.

1280. Director's Report.

The Director reported:

(a) that the Conference of Empire Meteorologists in August has been entirely successful. The Report was now ready for the printer;

(b) that meetings of the International Meteorological Organisation had been held in Danzig and Warsaw in September 1935 and many important decisions had been taken;

(c) that overseas stations had been established, in the first place for one year, at Gibraltar. Khartoum and Aden. An Officer had also joined a mobile unit in the Mediterranean. This had meant the provision of 4 more forecasters, which had only been possible by closing down certain stations on R.A.F. aerodromes in Great Britain.

(d) that the question of the possibility of the re-opening of Ben Nevis had been raised in the Scottish Press, by Parliamentary question, and by letters to the Under-Secretary of State for Air and the Meteorological Office. In view of the decision which was taken in 1932 when the question of the re-opening of the Observatory for the Polar Year had been thoroughly investigated, the Air Ministry had replied that the value of the observations which would be obtained would be incommensurate with the expense involved.

Professor Sampson and Mr. Rose expressed themselves satisfied with the action which had been taken.

1281. The Committee agreed to the following dates for the meetings in 1936.

January 15th

March 11th

May 6th

July 8th

September 9th

November 11th

Gwydyr House,
Whitehall,
11th March, 1936.

METEOROLOGICAL COMMITTEE

ONE HUNDRED AND FIFTY THIRD MEETING.

PRESENT:-

Professor Sampson	(In the Chair)
The Director	Mr. Knight
Professor Chapman	Colonel Macrae
Captain Ellery	Sir Thomas Middleton
Mr. Flood	Mr. Rose
The Hydrographer	Mr. F. Entwistle (Secretary)

Miss D.G. Chambers (Acting Secretary).

In the absence of Sir Henry Lyons on account of illness, Professor Sampson was elected to take the Chair.

The Committee asked the Secretary to write to Sir Henry on their behalf expressing concern at his illness and conveying their wishes for a speedy recovery.

1281. The minutes of the 152nd meeting, held on 13th November, 1935, were confirmed and signed.

1282. Empire Air Mail Scheme. Mr. Entwistle's visit to Newfoundland and Canada.

The Secretary gave a brief account of his visit to North America in November and December with the United Kingdom Air Mission in connection with the establishment of a trans-Atlantic air service. Discussions had taken place in Ottawa with representatives of the Governments of Canada, Newfoundland and the Irish Free State and later in Washington with representatives of the United States Government. The main points which had arisen with regard to meteorology were the responsibility for the meteorological service in Newfoundland where the western terminal air base would be located, the organisation which would be required between Newfoundland and Montreal and the arrangements for the supply of meteorological information between New York and Montreal and between New York and Bermuda on the southern route.

The discussions at Ottawa had been preceded by a survey tour of Newfoundland by Mr. Entwistle, followed by discussions with the Director of the Meteorological Service of Canada at Toronto. As a result of these discussions, it was recommended at Ottawa, that Canada should assume responsibility for the meteorological service in Newfoundland, including the forecasting arrangements at the terminal air base. Confirmation of these arrangements had not yet been received from the Canadian Government.

1283. Establishment of Meteorological Service in the Irish Free State.

The Secretary reported that the arrangements for the projected trans-Atlantic air service included an eastern terminal base in the Irish Free State. The recent discussions regarding this service had brought into prominence a question which had been raised previously but which had been in abeyance, viz. the assumption by the Irish Free State Government of responsibility for the meteorological service in their territory.

The Secretary had visited Dublin in February to discuss with responsible officials of the Free State Government arrangements for handing over the meteorological service. The discussions had been most cordial and subject to confirmation by the two Governments agreement had been reached regarding the procedure to be followed. The main point of interest was the proposal to take over the service gradually in agreement with the London Meteorological Office, the transition period to cover a number of years. The last service to be taken over would probably be the trans-Atlantic air base so that the London Office would be responsible for the forecasting arrangements there for some time to come.

1284. Report on progress in establishment of Meteorological Services in Sudan, Palestine, Iraq and Egypt.

The Secretary referred to Minute 1272 in which the Committee had been informed of the results of the visit of the Air Ministry Mission to Iraq, Palestine, Egypt, the Sudan and British East Africa in May and June, 1935. It was now possible to report further progress in the development of meteorological services in those countries. The Sudan Government had decided to establish a Meteorological Service and were about to appoint a Director and a Scientific Assistant. The Air Ministry had agreed to contribute one-third the cost of the Service. The Government of Palestine had also agreed to establish a Meteorological Service but it was understood that they were appointing a German as Director. In Iraq and Egypt negotiations were proceeding with a view to the establishment of national Meteorological Services, which would take over the work at present being performed for civil aviation by the Meteorological Office staffs attached to the Royal Air Force. In Egypt it was anticipated that the whole of the meteorological service would eventually be taken over by the Egyptian Physical Department.

The Director, who had been engaged on other business, here joined the meeting.

1285. British East African Meteorological Service.

The Director explained that the policy being followed in the Empire Air Mail Scheme was that the Colonies over whose territories the air routes would lie should be responsible for the necessary ground organisation, i.e. for the aerodromes, the wireless and Meteorological Services. There was at present a joint Meteorological Service in British East Africa comprising the Colonies of Kenya, Uganda, Northern Rhodesia, Tanganyika and Zanzibar, but lack of funds would prevent the provision of an adequate service for the air mail route at the present time. The Treasury had therefore sanctioned a grant to the Service from Air Ministry funds not exceeding £5,000 per annum for a period of five years.

1286. Formation of Overseas Division.

The Director explained that in the original scheme of re-organisation it had been his intention to station a Principal Technical Officer at Heliopolis in charge of the work in the Middle East, Malta and Iraq. In view of the Empire Air Mail Scheme which involved the organisation of meteorology on the trans-Atlantic routes as well as routes to the east, it was found desirable that the Principal Technical Officer should be in London and not in Heliopolis. An Overseas Division was therefore established at Headquarters and Mr. F. Entwistle placed in charge.

A training and research section of the Overseas Division had been established at Croydon Aerodrome and seven newly recruited Technical Officers were at present being trained there under Mr. Peters, who had been in charge of the forecasting Training Class held at Kensington for Assistants II.

1287. Amalgamation of Instruments and Army Divisions.

In accordance with the plan drawn up when the Carpenter Scales were applied to the Meteorological Office the old Instrument Division and Army Services Divisions had been combined and placed under the charge of a Principal Technical Officer, Mr. J.S. Dines.

1288. Scheme for preparation of ocean charts. (Minutes 1189, 1199, 1207).

The Director recalled that the Honourable Company of Master Mariners had asked in 1931 that marine meteorological charts for all oceans should be compiled. The necessary date existed in the old logs though the staff of the Marine Division was not sufficiently large to undertake the extraction and tabulation required. There was, however, a difference of opinion as to the necessity for the charts; the Board of Trade did not support the request of the Honourable Company of Master Mariners and the Admiralty were of opinion that the needs of the Royal Navy would be met by small scale, three-monthly, charts.

After careful consideration, therefore, it was decided to review the matter in two years time. Meanwhile, from 1932 onwards, by curtailment of certain other work in the Marine Division, some of the old data were extracted.

During the re-organisation of the office consideration of the matter had to be postponed but the provision of the charts had now become an urgent matter. They were required for fixing boundaries of load-line zones, for the organisation of trans-oceanic air lines and the Admiralty had now found that small scale charts would not supply the information required by the Fleet Air Arm.

Treasury sanction had therefore been sought for the staff which would be necessary to enable the work to be put in hand. The work would be in three parts:-

(a) extraction of data on to Hollerith cards;

(b) discussion and preparation of charts;

(c) publication of the charts.

Sanction had just been received for the addition of nine writing assistants to the staff of the Marine Division for a period of three years to undertake the work under (a).

The Hydrographer and Captain Ellery asked that the Admiralty and Board of Trade, respectively, might be officially informed.

1289. Broadcasting of Weather Reports for Aviation (Minutes 1265, 1272).

The Director reported that the full scheme for broadcasting weather reports came into operation on 15th February. The issues were made from the Air Ministry radio-meteorological station at Borough Hill, Northamptonshire, on wave length 1,186 m. (253 kc/s). The broadcasting began at 0715 (0745 in Summer Time) and continued to 1945 (2045 in Summer Time). The observations were broadcast 15 minutes after the hour at which they were taken and repeated 15 minutes past every subsequent hour until the next observations were available unless reports of a sudden change of weather had been received subsequent to the hour of observation, in which case these would be announced.

Full details of all the observations and forecasts issued had been promulgated in an Air Ministry Order A.152/1935.

1290. Delay in publication of British Rainfall, 1934.

The Director referred to the great delay there had been in the publication of the 1934 volume of "British Rainfall" which had given rise to complaints from various sources. The delay had been due to an abnormal amount of sick leave in the Division responsible for the preparation of the volume, to changes of staff necessitated by the introduction of the Carpenter Scheme, and also to delay at the Stationery Office. An effort was being made to avoid such delay in future, and a programme had been drawn up for work on the 1935 data which should ensure earlier publication.

1291. Close of Forecasting Training Class.

The Director reported that it had not been possible to continue the Forecasting Training Class for the full six months. It had been brought to an end after 4½ months. Four out of the six Assistants II had been promoted to Assistants I of whom two had been sent to Malta to assist in the forecasting work while continuing their training there and two to the Overseas Training Division at Croydon. The two remaining Assistants II had been posted to the Forecast Division.

1292. Recruitment of Staff.

The Director reported that since October last nine new Technical Officers had been recruited, all men with Honours Degrees in Physics or Mathematics. Seven were being trained at Croydon (see minute 1286). Four more were being appointed in the course of the next month.

In addition 12 Assistants III, men who had taken the Intermediate B.Sc. examination, were also being appointed.

1293. Change of Secretary.

The Director explained that now Mr. Entwistle was in charge of the new Overseas Division he would not have time to carry on the duties of Secretary of the Meteorological Committee; moreover they were not appropriate to a Principal Technical Officer.

According to the constitution of the Committee the choice of Secretary lay with the Chairman, and he proposed to ask Sir Henry Lyons if Miss D.G. Chambers might be appointed Secretary to relieve Mr. Entwistle.

The Committee expressed their appreciation of Mr. Entwistle's services since his appointment in October, 1934.

Air Ministry.
Adastral House,
Kingsway,

8th July, 1936.

METEOROLOGICAL COMMITTEE.

ONE HUNDRED AND FIFTY-FOURTH MEETING.

PRESENT:-

Sir Henry Lyons (in the Chair)	Mr. Nutt.
The Director.	Mr. Rose.
Professor Chapman.	Professor Sampson.
Colonel Macrae.	Mr. Webster.

Miss D.G. Chambers (Secretary.)

Apologies for absence were received from the Hydrographer, Captain Ellery, and Sir Thomas Middleton.

4. The minutes of the last meeting, held on 11th March, 1936, were confirmed and signed.

The Chairman welcomed to the Committee Mr. F.G. Nutt, C.B.E. who had succeeded Mr. C.N. Knight as Air Ministry representative for finance, and confirmed the appointment of Miss Chambers as Secretary (Minute 1293.)

The Committee wished to offer their congratulations to the Hydrographer on the honour of C.B. which His Majesty had been graciously pleased to confer upon him in the Birthday Honours List. They also wished to congratulate Sir Thomas Middleton on his election to a Fellowship of the Royal Society.

The Secretary was instructed to convey these congratulations by letter as both the Hydrographer and Sir Thomas Middleton were absent.

5. Annual Report for the year ended 31st March, 1936.

The Annual Report, which had been previously circulated in galley proof, was accepted after a number of verbal corrections.

6. Extension of Mr. Lempfert's service. (Minute 1263)

The Director reported that, subject to the approval of the Meteorological Committee, the Air Ministry had extended Mr. Lempfert's service for another year, i.e. until 7th October, 1937.

The Committee approved the extension.

7. Expansion of the Royal Air Force and Civil Aviation: provisional scheme for meteorological stations. (Minute 1265).

The Director stated that it had now become possible to obtain a clearer view of the requirements of the expanded Royal Air Force and increased internal Civil Aviation, and he had just prepared his proposals for staffing the meteorological stations which would be required.

The increase in night flying involving at certain stations a 24-hour forecasting service and the long spread-over at many other stations rendered necessary a complete re-organisation of meteorological stations. The present Distributive Stations were staffed in general by one professional officer and three assistants. For the future two main types of station were proposed:

(1) Stations with Forecasting Officers	
(a) where a 24-hour service was involved	6 stations (5 Bomber Group H.Q's Croydon).
(b) where there would be no regular night duty but in some cases a long spread-over.	27
(2) Stations staffed by Assistants	
(a) where synoptic charts would be drawn	31
(b) where observations only would be taken.	3
	67

This would mean an increase of 45 in the number of stations.

At Night Bomber Group Headquarters it was proposed to place stations with a Senior Technical Officer in charge (at Croydon there was already a Senior Technical Officer).

The stations staffed by Assistants would be linked by teleprinter or telephone to stations in the district where there were Forecasting Officers.

The total increase of staff involved in the scheme was 130 spread over the various grades: of these 5 Technical Officers and 12 Assistants III had been recruited early in the year.

8. Recruitment of Staff.

The Director explained that the appointment of so many new staff at once would create a large block in promotion in future years and he had not yet discovered a solution to this problem.

Before any new staff were recruited to the grades of Assistant I or Assistant II, promotion of the present staff would be made as far as possible.

The Director stated that notices had been issued advertising vacancies in the Technical Officer and Assistant III grades and in each case just over 100 applications had been received. Immediate recruitment of 10 Officers and 20 Assistants was contemplated.

8. Meteorological Services overseas.

(a) Empire Air Routes (Minute 1284)

Iraq. The Director reported that Treasury sanction had been obtained for seconding two officers for duty with the new 'Iraqi Meteorological Service. Mr. J. Durward, Senior Technical Officer, had accepted the post of Director of the Service under a contract terminating on 31st December 1938 and Mr. J.L. Galloway, who joined the Office as Technical Officer on 1st April, 1936, had accepted the post of Assistant Meteorologist at Basrah, under a contract lasting three years.

Mr. Towfik Fattah, an 'Iraqi, had been sent to England for six months' training in the Meteorological Office. At the end of this period, he would return to 'Iraq to understudy Mr. Durward with a view to taking charge of the 'Iraqi service on the expiry of the latter's contract.

Sudan. The post of Government Meteorologist at Khartoum had been offered to Mr. W.D. Flower, a Technical Officer, who entered the Office in February, 1927 and the post of Assistant Meteorologist had been offered to Mr. J. Carmichael who joined the Office as Technical Officer in April, 1936. Both officers would resign from the Meteorological Office on completion of the arrangements with the Sudan Government.

(b) Establishment of Meteorological Service in the Irish Free State. (Minute 1283)

The Director reported that formal proposals had now been received from the Irish Free State Government for taking over the meteorological service in that country. The Irish Free State proposed to assume nominal control of the service on 1st October, 1936, when they would take over Valentia Observatory, the telegraphic reporting, climatological and rainfall stations. Actual control would be taken over as staff and facilities became available. The Meteorological Office would provide the staff and control the meteorological organisation at the trans-Atlantic air base on behalf of the Irish Free State service until that service was in a position to take over complete control.

(c) Trans-Atlantic Air Service (Minute 1282)

The Director reported that the Air Ministry had made available an aircraft for upper air observations in Newfoundland and that a member of the staff of the Canadian Meteorological Service was supervising the observations.

Lieutenant Commander Moorhead, Director of the Meteorological Service of Bermuda, had recently visited England and during his visit proposals had been formulated for the expansion of his service to meet the requirements of the air services between Bermuda and New York and along the Southern Atlantic air route.

Arrangements for the experimental trans-Atlantic flights were not yet completed. It was probable that certain flights would take place from the Irish base in October of the present year but these might be confined to the eastern half of the North Atlantic. They would involve, however, the establishment on a temporary basis of a meteorological station at the base in Ireland and preliminary arrangements for this were in hand.

Air Ministry.
Adastral House.
(Room 271)
Kingsway.

11th November, 1936.

METEOROLOGICAL COMMITTEE.

ONE HUNDRED AND FIFTY-FIFTH MEETING.

Present:-

Sir Henry Lyons (in the Chair)
The Director
The Hydrographer
Professor Chapman
Captain Ellery
Colonel Macrae
Professor Sampson

Miss D.G. Chambers (Secretary)

Apologies for absence were received from Sir Thomas Middleton, Mr. Rose and Mr. Webster.

The minutes of the 154th meeting held on 8th July, 1936, were confirmed and signed.

Correspondence. In accordance with the Committee's instructions (Minute 1394) letters of congratulation had been sent to Sir Thomas Middleton on his election to a Fellowship of the Royal Society and to the Hydrographer on his receipt of the honour of C.B., and letters of appreciation had been received in reply.

Edinburgh Meteorological Committee. The minutes of the meeting held on 25th June, 1936, had been circulated.

Estimates for 1937-38. The sketch estimates for 1937, shown below, were circulated. They showed an increase of £48,000 over the figures for 1936. The Director indicated the headings under which the main increases appeared:

Expenditure:-

9A and B - Salaries:

The increase of £14,000 under the sub-head is mainly due to provision taken for additional staff.

9 D/1. - Instruments:

Provision has been made, to the extent of £1,000, for mobilisation equipment for a Meteorological Service in the Field and, in addition, for instrumental equipment at several new stations which are to be established and for special searchlights for cloud observations on R.A.F.

aerodromes. The sub-head shows an increase of £2,000 but the proportion recoverable from Navy Votes under 9(H)2 is likely to be larger by £500.

9 E. - Works Services:

The sum allocated to this sub-head does not include the cost of building meteorological offices at several new stations which are to be established, as the incidence of charge is still under discussion.

9 F. - Telegrams, Telephones etc.

This sub-head shows an increase of £15,400, which is mainly due to provision for a private wire system of communication between Headquarters and Outstations. It provides also for an increase in the number of wireless reports from ships and for additional remuneration to Merchant Navy Agents.

9 H. - Payments to other Governments.

This is a new sub-head introduced to provide for various payments to Dominion and Colonial Governments, which have been authorised by the Treasury, towards the cost of meteorological services mainly in connection with Empire Air Routes. It includes payments to British East Africa, the Irish Free State, Anglo-Egyptian Sudan and Bermuda.

Appropriations-in-Aid.

9 J/2 - The amount recoverable from the Admiralty will be increased by the cost of balloons and hydrogen supplied to the Royal Navy - hitherto an Air Ministry liability, and a sum of £500 has accordingly been added.

9 J/3. - This sub-head has been reduced in consequence of the decision to credit to H.M.S.O. as from 1st April, 1937, the receipts from subscriptions to the Daily Weather Report.

METEOROLOGICAL OFFICE.
ESTIMATES (SKETCH) 1937.

VOTE 9 SUBHEADS A - J.

VOTE 9	SERVICE		
	Expenditure	1937.	1936.
A	Salaries and Allowances: Meteorological Office	63,000	61,000
B	Outstations and Observatories	95,000	83,000
C 1.	Fuel and Light	500	500
2.	Transport	5,000	5,400
D 1.	Instruments, Stores and Equipment	18,000	16,000
2.	Research	2,500	2,500
E	Works and Rents	9,000	7,000
F	Telegrams and Payments to Observers	36,000	20,600
G	Superannuation	1,000	1,000
H	Other Governments	15,000	
		£245,000	£197,000
	Appropriations-in-Aid.		
J 1.	Royal Society	600	500
J 2.	Sale of Instruments	5,500	5,000
J 3.	Fees for Inspections, Data etc.	2,400	3,000
J 4.	From Navy and Army Votes	7,500	7,500
		£16,000	£16,000
	Net	£229,000	£181,000

In reply to a question from Professor Sampson, the Director explained that the increase in expenditure was due chiefly to expansion of Civil Aviation and also of the Royal Air Force. The whole of the Vote under the new sub-head H was for civil aviation. The estimates were likely to show further large increases during the coming two or three years.

303 Retirement of Dr. Whipple. The service of Mr. Whipple, who reached the age of 60 years on 17th March, 1936, had been extended for one year to 17th March, 1937. (Minute 1279). The Director said that it was contrary to Air Ministry practice to extend the service of officers after the usual retiring age of 60. In the exceptional circumstances now obtaining, however, when the loss of a capable senior officer would weaken the staff of the Office at a time when exceptionally large new demands were being made upon it, the Establishment Branch were prepared to extend Dr. Whipple's service for another year subject to the approval of the Meteorological Committee.

In the circumstances the Committee approved the further extension for one year to 17th March, 1938.

304 Re-organisation of Naval Division. (Minute 1277)

The Director gave a short history of the Division. During the war the Admiralty maintained its own meteorological service which survived a few months after the end of the war and was then absorbed in the Meteorological Office. The Naval Division was established in April, 1921 with Commander (now Captain) L.G. Garbett as Superintendent. At that time there was no meteorological organisation in the Fleet but the increasing use of meteorology in air navigation demonstrated its value in sea navigation also, and gradually the present organisation of Fleet Meteorology had grown. It necessitated a large amount of administrative work which had been carried out by the Naval Division directly for the Admiralty.

The re-organisation of the Meteorological Office Staff in accordance with the recommendations of the Carpenter Committee had necessitated the amalgamation of the Divisions of the Office in pairs, each new Division to be under the charge of a Principal Technical Officer. A proposal to combine the Naval Division and the Marine Division under a civilian had been discussed with the Admiralty and the Board of Trade but it had not been acceptable and no decision had been arrived at. The matter had been left to the Director and the Hydrographer to discuss and as a result a letter had now been received by the Air Ministry from the Admiralty proposing that the administrative work of the Division should be transferred to the Admiralty, with Captain Garbett in charge, under the Hydrographer, the scientific work being retained by the Meteorological Office. The Director pointed out the undesirability of having more than one meteorological service in the country, instancing cases of other countries where it had proved a failure, and said that a reply had been sent to the Admiralty signifying the concurrence of the Air Council in the proposal and setting out a number of points on which it was desired to secure agreement before details of the transfer were discussed. Chief amongst these were:

(1) All forecasting work to be done by the Meteorological Office.

(2) The Director of the Meteorological Office to continue to represent the British Government on international meteorological conferences.

(3) The desirability of the attendance of Captain Garbett at the monthly conferences of Superintendents of the Meteorological Office to hear their reports and to give a report on his work.

The Chairman expressed the hope that the Hydrographer would remain a member of the Committee, and Professor Sampson hoped that the proposed transfer would not mean a reduction in the amount of scientific work done. The Director was of opinion that it was likel to increase rather than diminish and the Hydrographer agreed.

The Hydrographer assured the Committee and the Director that the Admiralty had no wish to set up a separate meteorological service, and that there would be no difficulty in their agreeing on the points raised in the Air Ministry letter (File 388181/35).

1305. Meteorological Work in the Merchant Navy.

(a) Scale of fees of Merchant Navy Agents. (File 508212/36).

The Director reminded the Committee that meteorological work in merchant ships was voluntary and that a number of retired officers of the Merchant Navy acted as agents of the Meteorological Office in obtaining the interest of captains in the work, supplying the necessary instruments and logbooks and giving guidance and advice. At the present time there were six agencies in Great Britain, one at Hong Kong and one at Sydney (New South Wales). A scale of fees for this work was fixed during the period 1868-1873 and remained in operation, practically unaltered, until 1927. In that year the Marine Superintendent put forward certain proposals for increase of fees which would, in effect, have meant salaries for the Agents. An alternative proposal, which retained the payment by fees, but increased some of them by 100%, was accepted by the Treasury and regarded by all concerned as satisfactory.

In 1936 the Marine Superintendent again put forward proposals for increased fees for Merchant Navy Agents and also the institution of a new fee for work not covered by the existing fees. The Director had been able to obtain Treasury sanction for the new fee but had not felt justified in asking for increased fees for the existing work done. The Marine Superintendent had, however, taken the matter up again (an extract from his report on his visit to certain Merchant Navy Agencies in May-July, 1936 had been circulated (File 526225/36)) and the Director wished to have the Committee's advice in the matter. He did not propose to discuss the details in full Committee but suggested the formation of a small sub-committee to look into the matter.

Captain Ellery considered that the existence of dissatisfaction among Merchant Navy Agents should not be over-looked and suggested that evidence should be sought from the Agents themselves.

A sub-committee was appointed consisting of -

The Director

Captain Ellery

Mr. Nutt.

(b) Prospects of Nautical Officers. The Director said that there were three so-called Nautical Officers, retired officers of the Merchant Navy: one at Headquarters with the pay of a Technical officer, one at London Docks and one at Liverpool both with pay of Assistant I. The duties of the latter were the same as those of the Merchant Navy Agents but they demanded whole-time officers. The holders of all three posts had been given to understand, on appointment, that there would be no prospect of promotion to higher posts in the Office, that of Marine Superintendent being open only to an officer who had held important commands. He explained that pay and grading of staff was a matter for the Establishment Branch but that he had included the item in the Agenda since the Marine Superintendent had raised the matter in his report above-mentioned. Moreover it would not be possible to discuss it until the re-organisation of the Naval Division had been carried through. The Sub-Committee appointed above might then be asked to consider it.

306. Presentation to Climatological Observers. The Director said that for some years it had been the practice to present voluntary rainfall observers who had taken observations for a period of 40 years with a free copy of "British Rainfall" annually as a mark of appreciation of their services. The proposal had been put forward that some presentation should also be made to voluntary climatological observers with a long record of service and an aneroid barometer, suitably engraved, costing about £2 to £3. was considered more appropriate for the purpose than official publications.

Having regard to the fact that the number of such voluntary observers would be small, the Committee recommended the adoption of the proposal.

307. Establishment of Meteorological Service in the Irish Free State. (Minute 1283). The Director said that the Irish Free State Government proposed to assume control of the meteorological service in their country from 1st January, 1937 and that a conference between officials of the Free State Government and the Air Ministry would take place prior to that date to discuss the details of the transfer. (File 434393/35).

It was probable that a Technical Officer (Mr. A.H. Nagle) in the London Meteorological Office would be offered the appointment of Director of the new Service.

308. Recruitment of Staff. The Director said that since the last meeting of the Committee seven Technical Officers and nine Assistants III had been appointed and that appointments of ten more Assistants were about to be made.

In the same period the Office had temporarily lost the services of Mr. Durward, Senior Technical Officer, and Mr. Galloway, a newly recruited Technical Officer, by secondment to the new Iraqi service. Mr. Flower and Mr. Carmichael, Technical Officers, had resigned to take up appointments in the new Sudan service.

Professor Chapman expressed the view that there should be better means of training in meteorology in the Universities so that it was not necessary for training to be given in the office. He thought that there should be a post-graduate course in meteorology.

The Director agreed as to the desirability of teaching meteorology at the Universities but thought that before a man would take meteorology as a post-graduate course he would want to be assured of a post in the Meteorological Office at the end of it, and that assurance could not be given.

310. **Director's Report.** The Director reported that:

(1) The Treasury had sanctioned the establishment of a Second Meteor Flight in Northern Ireland (Minute 1276) (File 465042/35)

(2) Meetings of the International Commissions on Solar Radiation and Ozone held at Oxford in September, 1936 had been attended by Dr. Whipple. (Files 332808/34 and 498406/36)

(3) Meetings of the International Union of Geodesy and Geophysics held at Edinburgh in September, 1936 had been attended by the Director, Colonel Gold and Dr. Whipple from London; Dr. Goldie and Dr. Stagg of the Edinburgh Office, who had acted as local secretaries of Associations, had also attended. During the course of the meetings, the Association of Terrestrial Magnetism and Atmospheric Electricity visited Eskdalemuir Observatory. (Files 517585/36 and 519766/36)

(4) A meeting of the Regional Commission for the Far East, appointed by the International Meteorological Conference in Warsaw in September, 1935, would be held in Hong Kong in January, 1937. Authority had been given for Colonel Gold, who had been President of the Commission for Synoptic Weather Information since the war, to attend the meeting. He would take the opportunity of visiting Meteorological Services in Singapore and India on his return journey. (File 577264/36)

311. **Dates of meetings in 1937.** The following dates were agreed upon:

January 13th
March 10th
May 5th

July 7th
September 8th
November 10th

Extract from Report on Marine Superintendent's visits to Cross Channel Packet Services, Merchant Navy Agencies, and inspections of Port Meteorological Offices.

Commenced 11th May 1936 ended 18th July, 1936.

After visiting all Port Meteorological Offices and Merchant Navy Agencies in Great Britain I am able to report that generally the Port Meteorological Offices and Merchant Navy agencies are well run and the relations of the Marine Division with the Merchant Navy are very healthy. Nothing should be allowed to damp the fine spirit which has been worked up of recent years. I have noted that there is some dissatisfaction with the Agents, and the Nautical Officers of the Meteorological Office are disheartened owing to the inadequacy of the scale of fees of the former, and the look-out for the future of the latter. Last year in submitting my report I reported that the agents' fees were inadequate and I have since made representation, including the amount of fees which I believe to be fair, and I have also reported verbally and in writing the matter of the grading of the Nautical Officers. I mention this in this report because I wish to show how desirable it is that all the nautical officers of the Meteorological Office and the Merchant Navy Agents who guide the voluntary work at sea should have no legitimate reason for being disheartened. I believe that the representations which I have made asking for certain adjustments in the fees of the agents and the grading of the whole time Nautical Officers, if acceded to, would remove this damper upon the shore link with the Merchant Navy at sea, which if it grows may spread to the work at sea with undesirable results.

(Sgd.) L.A. Brooke Smith,
Marine Superintendent.

London.
July 18th, 1936.

Air Ministry,
Adastral House,
London, W.C.2.
7th July, 1937.

METEOROLOGICAL COMMITTEE

ONE HUNDRED AND FIFTY-SIXTH MEETING.

Present:

Sir Henry Lyons (in the Chair)

The Director.	Sir Thomas Middleton.
Professor Chapman.	Colonel Rossiter.
Captain Ellery.	Professor Sampson.

Miss D.G. Chambers (Secretary)

Apologies for absence were received from the Under Secretary of State for Air, the Hydrographer, Mr. Abraham, Mr. Flood, Mr. Nutt and Mr. Rose.

1311. The minutes of the meeting held on 11th November 1936, already circulated, were confirmed and signed.

1312. Changes in Membership.

Colonel A.E. Macrae, O.B.E. had been succeeded in December 1936 by Brevet Colonel F.N.C. Rossiter, M.B.E., M.C., Superintendent of Experiments, Shoeburyness, and as War Office representative on the Committee.

Mr. J.A. Webster, C.B., D.S.O., had been succeeded by Mr. J.B. Abraham, C.B., as Chief Establishment Officer, Air Ministry, and in that capacity Mr. Abraham replaced Mr. Webster on the Committee.

The Chairman welcomed Colonel Rossiter to the Committee (Mr. Abraham was unable to attend).

The Committee wished to record their indebtedness to Colonel Macrae and Mr. Webster for their services and the Secretary was instructed to convey the Committee's appreciation to them.

1313. Annual Report of the Director, 1936-37. The Report had been circulated in galley-proof and, after a few verbal changes, was accepted by the Committee.

1314. Edinburgh Meteorological Committee. The minutes of the meeting held on 18th June, 1937, had been circulated and were accepted.

1315. Extension of services of Assistant Directors.

The Director reported that the Air Ministry had accepted the recommendation of the Committee to extend Dr. Whipple's service for a second year to 17th March, 1938 (Minute 1303) and proposed, subject to the Committee's recommendation, to extend Mr. Lempfert's service for a third year to 7th October, 1938.

In view of the present staff problems, which were Mr. Lempfert's responsibility, the Committee recommended the extension of his service for another year.

Professor Chapman, while regretting the necessity for Dr. Whipple's retirement, asked that the Committee might have an opportunity of discussing the choice of his successor before the appointment was made. He was anxious that the research side of the work at Kew Observatory should be seriously considered and the post given to a man who had specialised in research, not administration, and not necessarily to the man next in seniority.

The Director pointed out the difficulties in the way of such procedure in a Government Department but agreed that the subject should be placed on the Agenda for discussion at the November meeting which would be before the appointment was due to be made.

1316. Establishment of Meteorological Service in the Irish Free State (Minute 1307)

The Director reported that the Irish Free State Government had assumed control of the meteorological service in that country on 1st April, 1937, Mr. A.H. Nagle, a former Technical Officer, having been appointed the first Director. Until the new Service had recruited and trained its own staff, Valentia Observatory and the meteorological station at the Trans-Atlantic Air Base at Foynes were being run by the Meteorological Office, London, on an agency basis, the salaries of the staff being recovered from the Irish Free State.

1317. Scale of Fees for Merchant Navy Agents (Minute 1305)

The Director reported that the small Sub-Committee appointed at the last meeting, consisting of Captain Ellery, Mr. Nutt and himself, to consider applications from Merchant Navy Agents for increased remuneration, had met on 2nd March, 1937, for a preliminary discussion and again on 6th April, 1937, when the Agents from Southampton, Glasgow and Cardiff attended to give evidence.

The Sub-Committee agreed that there were good grounds for increasing the remuneration of the Agents, particularly at the smaller Agencies where the fees were not large enough to attract the right sort of candidate. It had therefore been decided to approach the Treasury for sanction to pay a retaining fee of £25 per annum to all home Agencies, viz., Southampton, Glasgow, Cardiff, Leith, Hull, Newcastle. It was anticipated that the need for the Agencies at Sydney (N.S.W.) and Hong Kong would disappear within the next year or two.

The Committee approved the Sub-Committee's decision.
(File 508212/36)

1318. Transfer of Naval Division to the Admiralty (Minute 1304)

The Director reported that agreement having been reached between the Admiralty and the Air Ministry as to the details of the transfer, Treasury approval to the proposals was now awaited.

1319. Climatological Atlas of the British Isles.

The Director reported that at their meeting in Warsaw in September 1935 the International Conference of Directors had passed a resolution urging all Meteorological Services to prepare and publish Climatological Atlases, using averages for the years 1901-1930. There was no Climatological Atlas of the

British Isles, the only climatological maps of any kind being those in Bartholomew's Atlas of Meteorology, published in 1899. A number of Climatological Atlases published by other countries, notably U.S.S.R., Japan, Greece, and North America were on the table and were examined by the Committee.

The Committee were strongly of opinion that a Climatological Atlas of the British Isles should be prepared and published as soon as possible. (File 632402/37).

1310. Re-organisation of meteorological stations to meet expansion requirements of the Royal Air Force and Civil Aviation.

The Director reported that the scheme of re-organisation which he had described to the Committee in detail at previous meetings, (Minutes 1265, 1297) had now received Treasury approval. As a first step in bringing the scheme into operation eleven new stations had been opened at the beginning of May. The whole scheme would not be completed before 1939. (File S.37271).

1311. Recruitment and Training of Staff.

The Director reported that since the last meeting of the Committee the following staff had been recruited :

Technical Officers. (Honours degrees in Physics or Mathematics.)	11
Assistants II. (Science or Geography degrees.)	9
Assistants III. (Intermediate B.Sc.)	20
Observers. (Ex R.A.F. airmen)	8

Three of the Technical Officers were required to fill vacancies, one was employed temporarily on a special investigation; the remaining seven were undergoing an intensive course of training at Croydon.

The newly recruited Assistants II and III received their training at outstations, to which they were posted in excess of establishment.

A six-months' course of training of Assistants II in independent forecasting ended in April, 1937, and a further long course would be held in the late autumn. Short courses of training in forecasting work under supervision (of six weeks duration) were being held continuously at Croydon.

1312. Empire Air Mail Scheme.

The Director reported that in view of the anticipated development of British air services to British West Africa. the Superintendent of the Overseas Division visited the West African Colonies in February and March to discuss with the respective Administrations the development of meteorological services in those territories. The tour, which commenced on 26th December, 1936, included Gibraltar, Malta, Egypt, Khartoum and British East Africa. Opportunity was taken to inspect the Meteorological Office stations at Gibraltar, Malta and Heliopolis, and to enquire into the meteorological requirements of the Services and local Authorities, while the further development of local meteorological services formed the subject of discussions with the Governments of Egypt, the Sudan and Kenya. Full details of the tour would be given in the Annual Report, proof of which had been circulated to members (File 628958/37).

1313. Presentations to Climatological Observers. (Minute 1306).

The Director reported that the Treasury had approved the proposal that presentations to the value of £3. should be made to climatological observers of long standing, not more than three presentations being made in any one financial year. It had been decided that the most appropriate form of presentation would be an aneroid with a suitable inscription. (File 550128/36).

1314. International Meetings.

The Director reported that the International Meteorological Committee and a number of Commissions of the International Meteorological Organisation would meet in Salzburg in September, and he and Colonel Gold (as Chairman of the Commission for Synoptic Weather Information) would attend.

1315. Change in dates of meetings of Committee.

The Director reported that the present Under Secretary of State for Air (Lieutenant-Colonel A.J. Muirhead M.C., M.P.) wished to preside at meetings of the Committee in future and a day other than Wednesday would be more convenient to him. It was decided to alter the day of the meeting to Tuesday, and to hold the November meeting on Tuesday, November 9th, subject to this being convenient to the U.S. of S.

Air Ministry,
Adastral House,
London, W.C.2.
9th November, 1937.

METEOROLOGICAL COMMITTEE.

ONE HUNDRED AND FIFTY-SEVENTH MEETING.

Present:

Under-Secretary of State for Air (in the Chair)
The Director
The Hydrographer
Mr. Abraham
Professor Chapman
Sir Henry Lyons
Sir Thomas Middleton
Mr. Nutt
Colonel Rossiter
Sir D'Arcy Thompson
Miss D.G.Chambers (Secretary).

Apologies for absence were received from Captain Ellery and Mr. Rose.

Owing to his Parliamentary duties the U.S. of S. was unable to be present at the opening of the meeting and was obliged to leave before the close. In his absence the Chair was taken by Sir Henry Lyons.

326. Scale of fees for Merchant Navy Agents. (Minutes 1305, 1317).

The Director reminded the Committee that in November, 1936 a sub-committee consisting of Captain Ellery, Mr. Nutt and himself had been appointed to examine requests from Merchant Navy Agents for an increase in their fees. After two meetings, at one of which Agents from Southampton, Glasgow and Cardiff were interviewed, the sub-committee recommended that a retaining fee of £25 should be paid to each Agent, and at their meeting on July 7th the Committee accepted the recommendation and asked that the Treasury might be approached for sanction.

Before the letter could be despatched to the Treasury, however, circumstances had changed and it was considered that the proposal would not be acceptable to the Treasury. The Sub-Committee met again and substituted for their original proposal a suggestion that two of the fees should be increased from £1.0s.0d. to £1.10s.0d. The Treasury had been approached and had given sanction for these increased fees, which came into operation on 1st October, 1937. The increase in cost would be about £250 per annum.

327. Transfer of Naval Division to the Admiralty (Minute 1318).

The Director gave a short history of the Naval Division (see Minute 1304) leading up to the position in which the Division though in the Meteorological Office worked to a large extent under the Hydrographer of the Navy in administering the meteorological organisation in the Fleet.

The Admiralty had requested the transfer of the administrative work to that Department and after discussions lasting over two years, agreement had been reached as to the terms of the transfer, and Treasury sanction had been obtained.*

Under the Admiralty the Division would continue to be in charge of Captain Garbett who would be Chief Superintendent of Naval Meteorology, Hydrographic Department. The nominal date of the transfer was 1st August, 1937, but the actual date would depend on accommodation being found at the Admiralty. (File 388181/35).

* For convenience of reference the chief heads of agreement are given here although time did not permit of their being brought before the Committee.

1. Provision of forecasts. The Admiralty would not establish a forecast service in London.

2. Instruments. Meteorological instruments would be provided by the Meteorological Office.

3. International Meteorology. The Director would continue to be the official spokesman of Government on all international meteorological questions.

4. Marine Publications. A Committee would be formed to discuss marine publications consisting of :

   Assistant Director, Meteorological Office.
   Superintendent, Marine Division, Meteorological Office.

   Chief Superintendent, Naval Meteorology, Admiralty.

5. Interchange of Staff and liaison. Two Technical Officers would be seconded from the Meteorological Office Staff to the Admiralty.

   Chief Superintendent, Naval Meteorology would attend monthly Conference of Superintendents.

1328. Future of the Marine Division.

Referring to the re-organisation of the Meteorological Office on the lines recommended by the Carpenter Committee, the Director reminded the Committee that in order to justify the higher scales of pay, the Divisions of the Office had been combined in pairs and put in charge of a Principal Technical Officer : e.g. the Forecast and Aviation Divisions were combined into one division. The original proposal had been to telescope the Marine and Naval Divisions in the same way. The Superintendents of these two Divisions were respectively a retired Merchant Navy Captain and a retired Naval Commander (now Captain) and there were obvious difficulties in placing a scientific officer in charge. Discussions with the Board of Trade and the Admiralty had failed to find a solution of the problem but the transfer of the administrative side of the Naval Division to the Admiralty provided a partial solution.

The future of the Marine Division remained still to be settled, however, since the Division should not only carry on the administrative work of collecting observations from ships but should also be capable of the scientific discussion of the data. Unless the Superintendent of the Division could be in charge of both sides of the work, the grading of the post as a Principal Technical Officer was not justified.

The Superintendent of the Division had made representations regarding the pay and prospects of the Naval Assistants, of whom there were three on the staff: one graded as a Technical Officer at Headquarters and two as Assistants I at the Port Offices at London Docks and Liverpool.

The Director proposed to take up the whole question with the Board of Trade, who would no doubt appoint Captain Ellery to represent them.

The Committee agreed with this course of action.

The U.S. of S. now joined the meeting and took the Chair.

1329. The Minutes of the meeting held on 7th July, 1937, were confirmed and signed.

330. Correspondence.

The Secretary reported that letters had been sent to Mr. Webster and Colonel Macrae thanking them for their services on the Committee, and read a letter which had been received from Mr. Webster in reply.

331. Change in Membership of Committee.

Reported: resignation of Professor R.A. Sampson, F.R.S., Astronomer Royal for Scotland, representative of the Royal Society of Edinburgh, and appointment of Sir D'Arcy W. Thompson, C.B., F.R.S., Professor of Natural History, University of St. Andrews, as his successor.

Professor Sampson had served on the Committee since November, 1923 and had never missed a meeting. The Committee wished to express their indebtedness to Professor Sampson for his services and asked that a letter, signed by the Chairman, should be sent expressing their appreciation.

The Chairman extended a welcome to Sir D'Arcy Thompson on behalf of the Committee.

332. Retirements of Director and Assistant Directors in 1938.

Director. The Director reported that he would reach the normal retiring age of 60 on 2nd September, 1938 and that he did not intend to ask for any extension of his service. The appointment of his successor rested with the Air Council and the Secretary had appointed the following Committee to advise the Council in the matter :

Sir Henry Lyons
Professor Chapman
Air Vice Marshal Peirse (D.C.A.S.)
Mr. J.B. Abraham.

Mr. Abraham stated that this Committee had met and had discussed the general question from many points of view and were ready to meet again as soon as certain information which they desired had been obtained.

In reply to questions from Sir Henry Lyons and Sir D'Arcy Thompson, Mr. Abraham said that the normal retiring age of Civil Servants was 60 years of age; but that if it was in the interests of the Service for a man to be retained beyond that age it was within the discretion of the Department to ask him to do so, up to a maximum age of 65. If it was desired to retain a man beyond that age, reference had to be made to the House of Commons.

Assistant Directors. Dr. Whipple's service had been extended two years beyond the normal retiring age and his retirement would take place on 17th March, 1938 (Minute 1315).

Mr. Lempfert's service had been extended three years and his retirement would take place on 7th October, 1938 (Minute 1315).

The Director stated that according to the Committee's terms of reference :

> "The Committee shall -
>
> Appoint Assistant Directors and Superintendents after consideration of the recommendations of the Director."

He added that while the procedure for the promotion of Civil Servants would have to govern the new appointments, the Establishment Branch of the Air Ministry would seek the advice of the Committee. He did not think the matter could be conveniently discussed in full session and proposed the formation of a small sub-committee to deal with it, consisting of the same Committee members as in the Committee appointed by the Secretary above, namely:

Sir Henry Lyons
Professor Chapman
Mr. Abraham

The Committee approved this proposal.

1333. Meteorological Handbooks for the Navy. (126478/31).

The Director explained the need for the preparation of handbooks on the climate and practice of forecasting on the various Naval Stations. The handbooks were for the use of trained meteorological personnel in H.M. Ships. The recent state of emergency in the Mediterranean in 1935 had precipitated the necessity for the Handbook for that station and work on it had just been finished. The Admiralty had asked also for Handbooks for the other stations, namely :- China, East Indies, South Africa, West Indies and Home.

The Handbook for the China station was already in hand.

The preparation of these Handbooks would need additional staff and Treasury had sanctioned :-

4 Technical Officers
2 Assistants III
2 Draughtsmen
1 Clerical Assistant

for five years for the work.

The section had been placed under the direction of the Superintendent of the General Climatology Division in the first place and would probably prove a permanent addition to the work of the Office, since the Handbooks would require constant revision to keep them up to date.

.334. Progress with the Expansion Scheme.

(a) Stations and Staff. The Director reported that the

October, 1936 scheme for the re-organisation of meteorological stations on R.A.F. aerodromes had been modified and amplified by the R.A.F. Meteorological Policy Committee in July, 1937 resulting in an increase of stations required from 59 to 69 and a consequent increase in staff.

Additional demands were expected for stations on civil aerodromes as a result of the decisions of the Maybury Committee but these had not yet been formulated.

The demands of both service and civil aviation were considered together so that the same stations would supply both services where possible.

Further recruitments had been made since the last meeting of the Committee -

Technical Officers	8
Assistants III	12

and classes for training both new and existing staff in synoptic work were held continuously at Croydon.

(b) Weather Reports: Borough Hill W/T Station, Teleprinter Scheme.

The Director explained that in order to meet the demands of the R.A.F. for information as to the existing weather conditions, hourly broadcasts of reports in plain language from 53 stations were made through the Borough Hill W/T stations from 0715 to 1815. The reports were received at the Air Ministry by teleprinter from a number of stations, known as key stations, which had collected them by telephone from surrounding stations. The number of stations for which reports would be broadcast would be increased to about 70.

This was only the beginning of a larger scheme which visualised the provision of teleprinters on every aerodrome, both civil and service, connected to the Meteorological Office. General sanction had been obtained for the scheme - which was known as the Land-Line scheme - but the General Post Office were at present unable to make provision for it.

The Director added that demands had been received for a continuance of the service throughout the night but a large increase in staff would be involved and he was of opinion that the service could be provided by R.A.F. personnel since the service required was not really of a meteorological nature but merely signalling.

In reply to the Chairman the Director described the arrangements made for obtaining meteorological information during war; and the steps which were being taken to provide a war meteorological service.

1335. Progress with the Empire Air Mail Scheme.

(a) Transatlantic Trial Flights. The Director reported that the station at Foynes in the Shannon, which was the eastern base of the Transatlantic flying boats, and which would eventually be manned by personnel of the Irish Free State Meteorological Service, had been run by Meteorological Office personnel since April 14th, 1937. The western base was at Botwood, in

Newfoundland, under the Canadian Meteorological Service. Co-operation between the two services had been excellent. British and American aircraft had made five double crossings of the Atlantic, the times of the flights varying from 10 hours 36 minutes to 17 hours 45 minutes.

The staff, except for two Assistants, were withdrawn on October 16th and would spend the winter carrying out special investigations.

(b) Air Mail Service. The Director reported that pending the establishment of a permanent home base for the Empire Air Mail to the east a station had been opened at Hythe, near Southampton, and Treasury sanction had been obtained for an establishment of Staff:-

Senior Technical Officer	1
Forecasting Officers	4
Assistant II	1
Assistant III	8

(c) Visit of Mr. Entwistle to New Zealand, U.S.A. and Canada. The Director reported that Mr. Entwistle, Superintendent of the Overseas Division, had left by air for New Zealand on 4th November to attend a Conference called by Dr. Kidson, Director of the Meteorological Service, New Zealand, in view of the likely inauguration of trans-ocean air services in the South-west Pacific in the near future.

He would break his journey in Australia and return via U.S.A. and Canada where he would have an opportunity of discussing the meteorological arrangements for the trans-Atlantic flights.

1336. Progress of Investigation of the Upper Atmosphere.

(a) Radio Meteorographs. Referring to the necessity for a knowledge of conditions above the clouds both for aviation and for general meteorological purposes, the Director stated that all countries were now endeavouring to find means of obtaining meteorological data from the upper atmosphere by the use of instruments attached to free balloons carrying radio apparatus for sending signals to the ground. Experimental work had been done at the National Physical Laboratory on behalf of the Air Ministry and an instrument designed there was exhibited by the Director. He explained the principle by which different musical notes would be signalled to the ground according to the changes in temperature, pressure and humidity. With a view to reducing the price of the instruments, every piece of apparatus used was a commercial unit.

(b) Radio balloons for upper wind direction. Trials would be made at once with a method of obtaining wind direction by radio signal from instruments attached to free balloons. Two ground stations, a mile apart, had been selected near Larkhill.

(c) Determination of Water in the Atmosphere. The Director described the work which Dr. Paneth and Dr. Glückauf had been doing at the Imperial College of Science and Technology to determine the amount of water vapour in samples of air collected by means of apparatus sent up by balloons into the high atmosphere. So far the work had been experimental and a certain method of measuring the small quantities of water involved had not been achieved. The winter would be spent in improving methods before further ascents were made.

(d) Determination of helium in the atmosphere. The Director explained that Dr. Paneth had initiated this investigation but that the Meteorological Office participated by sending up the balloons.

1337. The Chairman left the meeting before (c) of minute 1336 above, and before doing so he expressed his pleasure at being able to meet the Committee and hoped that no inconvenience had been caused by a change of time and date of the meeting. He hoped to be able to preside at future meetings. He mentioned the great interest he had in the meteorological side of the Air Ministry and how, since joining the Ministry, he had realised the practical importance of meteorology.

1338. Sketch Estimates for 1938-39. The sketch estimates for 1938 with notes on the various headings.were circulated (Appendix I). They showed an increase of £103,000 over the figures for 1937.

The Committee approved the sketch estimates.

1339. Meeting of the International Meteorological Committee at Salzburg.

The Director reported that he had attended a meeting of the International Meteorological Committee at Salzburg from 20th-25th September. The Committee had been preceded by meetings of various Commissions and Colonel Gold had presided over a meeting of the Commission for Synoptic Weather Information; Mr. Entwistle also attended.

1340. Dates of Meetings in 1938.

The Chairman stated that the most convenient time and day for him would be 4 p.m. on Tuesdays, and the members finding this convenient the following dates were fixed for meetings in 1938

January 11th
March 8th
May 10th

July 5th
September 13th
November 8th.

APPENDIX I.

MINUTES OF THE 157TH MEETING OF THE METEOROLOGICAL COMMITTEE.

METEOROLOGICAL OFFICE. ESTIMATES (SKETCH) 1938.

VOTE 9 SUBHEADS A - J.

VOTE 9 SERVICE

	Expenditure.	1938 £	1937 £
A	Salaries and Allowances: Meteorological Office	65,000	63,000
B	Outstations and Observatories	115,000	92,000
C 1.	Fuel and Light	800	500
2.	Transport	12,000	5,400
D 1.	Instruments, Stores and Equipment	30,500	18,000
2.	Research	2,500	2,500
E	Works and Rents	30,000	25,000
F	Telegrams and Payments to Observers	85,400	38,800
G	Grants to other Governments	30,000	19,000
H	Superannuation	800	800
		£372,000	£265,000

	Appropriations-in-Aid.	£	£
J 1.	Navy and Army Votes	7,900	8,000
J 2.	Sale of Instruments	10,000	6,000
J 3.	Fees for Inspections, Data etc.	2,500	2,400
J 4.	Royal Society	600	600
		£21,000	£17,000
	Net	£351,000	£248,000

METEOROLOGICAL OFFICE.

Notes on the Sketch Estimates for Vote 9 (1938)

Sketch Estimates for Vote 9 (1938) show an increase of £103,000 over the figures for 1937.

The main increases are explained as follows:-

Expenditure:

9A and B - Salaries:

The increase of £25,000 is mainly due to provision taken for additional staff.

9 C/1 - Fuel and Light:

An addition of £300 has been made to provide for new stations and expenditure resulting from recent alterations at Eskdalemuir and Kew.

9 C/2 - Transport:

The increase of £6,600 is consequent upon the transfer of staff for special courses of training and for the purpose of establishing new stations under the approved Expansion Scheme.

9 D/1 - Instruments etc:

The total increase on this subhead is £12,500. The chief items of increase are £5,800 for the equipment of new stations; £2,400 for searchlights for the observation of cloud height; £3,000 for special apparatus for soundings in the upper atmosphere and £1,200 for the requirements of the Royal Navy.

9E - Works and Rents:

Provision for the installation on all R.A.F. aerodromes of searchlights for observation of cloud height has been increased by £6,000. An increase of approximately £4,500 has been made also in the amount provided for the erection of anemometers of special type at certain of the new meteorological stations. The cost of buildings on R.A.F. aerodromes in this country has been included this year under another Vote. £9,000 is included under this sub-head for quarters for meteorological staff at Gibraltar. The sub-head shows a net increase of £5,000.

9F - Telegrams, Telephones etc.:

The increase of £46,600 under this subhead is due mainly to the additional cost of observers and telegraphic charges in connexion with the provision of hourly weather reports for aviation. At present these reports are broadcast by W/T from the Borough Hill Station but ultimately they will be distributed by a teleprinter service, some of the instruments for which are now being installed.

9G - Grants to other Governments:

The increase of £11,000 is due to the increase in grants to Empire Meteorological Services in connexion with the Empire Air Mail Scheme.

Appropriations in Aid:

9J - Under 9 J/2 the amount estimated as recoverable by the sale of instruments has been increased by £4,000. This sum includes £2,500 recoverable from Navy Votes in respect of the purchase of hydrogen cylinders hitherto issued on loan to Naval units.

AIR MINISTRY,
London, W.C.2.

FT MINUTES.

5th July, 1938.

METEOROLOGICAL COMMITTEE

ONE HUNDRED AND FIFTY-EIGHTH MEETING.

Present:

Under Secretary of State for Air (in the Chair)
The Director
The Hydrographer
Mr. Abraham
Mr. Bigg
Professor Chapman
Captain Ellery
Sir Henry Lyons
Sir Thomas Middleton
Mr. Nutt
Mr. Rose
Colonel Rossiter
Sir D'Arcy Thompson

Miss D.G. Chambers (Secretary)

1341 The minutes of the meeting held on 9th November, 1937 were taken as read, confirmed and signed.

1342 Change in Membership of Committee.

Reported: resignation of Mr. J.E.W. Flood, C.M.G., from the Committee on his appointment as Third Crown Agent for the Colonies, and nomination of Mr. W.J. Bigg as the representative of the Colonial Office in his stead.

Mr. Flood had served on the Committee ever since it had been reconstituted as a result of the transfer of the Meteorological Office to the Air Ministry in 1919. He had attended the meetings whenever questions affecting the Dominions or Colonies had been under discussion and had acted as liaison between the Meteorological Office and the Colonial Office. The Director wished to put on record his indebtedness to Mr. Flood for the help he had given to the Office.

The Committee instructed the Secretary to express their appreciation to Mr. Flood for his long and valuable services.

The Chairman extended a welcome to Mr. Bigg on behalf of the Committee.

1343 Annual Report of the Director of the Meteorological Office.

The Report had been circulated in proof and, after a few verbal changes, was accepted by the Committee.

1344 Appointment of successor to Sir George Simpson as Director of the Meteorological Office.
(Minute 1332)

Mr. Abraham stated that Sir George Simpson had expressed a wish to retire at the age of 60 or as soon thereafter as the demands of the Service would allow. The Secretary of State for Air had appointed a Committee consisting of Sir Henry Lyons, Professor Chapman, Air Vice-Marshal Peirse (Deputy Chief of the Air Staff) and Mr. Abraham (Principal Establishment Officer of the Air Ministry) to consider the appointment of his successor. After enquiry into

17018.

the qualifications of the existing and former members of the staff and other possible candidates, the Committee unanimously recommended the appointment of Mr. N.K.Johnson, M.Sc., A.R.C.S., Chief Superintendent, Chemical Defence Research Department, War Office. The appointment had been approved by the Secretary of State and Mr. Johnson would take up his duties on 3rd September, 1938.

1345 Extension of Service of Assistant Directors (Minute 1332)

Mr. Abraham stated that the Sub-Committee nominated at the last meeting, consisting of Sir Henry Lyons, Professor Chapman and himself, had met to consider the appointment of two Assistant Directors to replace Dr. Whipple and Mr. Lempfert due to retire on 17th March, 1938, and 7th October, 1938, respectively. Mr. Johnson had attended the meetings. The Sub-Committee considered it undesirable to fill both posts just before the new Director took up his duties and made a recommendation for the filling of Mr. Lempfert's post only.

The Secretary, however, had not given his approval but had deferred the filling of both appointments until after Mr. Johnson's joining the Air Ministry. He would then have an opportunity of examining the duties of the Assistant Directors with a view to their redistribution before the new appointments were made.

Mr. Lempfert's service was therefore extended until 31st December, 1938 and Dr. Whipple's until 31st March, 1939.

In reply to a question from the Chairman as to how much time the Assistant Directors devoted to the scientific aspect of the work and how much to routine administration, the Director said that Dr. Whipple, Superintendent of Kew Observatory, was able to give practically the whole of his time to science, but both Mr. Lempfert and Col. Gold's official time was wholly given up to administration.

Further questioned by the Chairman, the Director stated - and was upheld by the members of the sub-committee - that to carry out their duties effectively the officers holding these posts must have high scientific qualifications as well as administrative ability.

Sir Henry Lyons, Professor Chapman and Sir D'Arcy Thompson were of opinion that when possible there should be some re-organisation of work so that the Assistant Directors could devote some of their official time to scientific problems. Sir Henry Lyons added that the Sub-Committee, while realising that during recent years constant expansion had made fundamental changes impossible, had expressed the wish that Mr. Johnson should review the whole organisation of the Meteorological Office and take the views of the Committee into consideration.

1346. Marine Division (Minute 1328)

(a) Appointment of Successor to Captain Brooke Smith.

The Director reminded the Committee that in the re-organisation of the Office on the introduction of the Carpenter scales of salary, the divisions had been combined in pairs, each under the superintendentship of a Principal Technical Officer, with the exception of the Naval and Marine Divisions. Subsequently, the Naval Division had been transfered to the Admiralty, leaving the Marine Division a smaller Division than any other in the Office.

Captain Brooke Smith, the present Superintendent of the Division, was due to retire on December 3rd, 1938, and an Interdepartmental Committee, composed as follows

The Hydrographer, Admiralty	
Captain Ellery Mr. Haigh	Board of Trade.
Mr. Cliff Mr. Cherry	Establishment Branch, Air Ministry.
The Director (Chairman) Mr. Lempfert	Meteorological Office.

had met to consider the position.

The Interdepartmental Committee decided that the Superintendent of the Marine Division must be a Captain of the Merchant Navy and that the Treasury should be asked to sanction a fixed salary of £850 for the post.

The Treasury had not sanctioned this salary and correspondence was still taking place. Mr. Abraham said that a letter had just been received from the Treasury proposing a scale of £700 - £850. The Director said that he did not consider this satisfactory but would be prepared to accept £750 - £850. The Chairman expressed himself strongly that not less than £750 should be offered and in reply to the Chairman Captain Ellery said that he was doubtful whether a scale of £750 - £850 would attract the type of officer required.

After further discussion the Committee desired to record their opinion that the commencing salary should not be less than £750 and if this did not attract a suitable candidate an inferior man should not be accepted but the salary scale should be reconsidered.

(b) Status of Nautical Assistants.

A letter had been received from the Institution of Professional Civil Servants requesting increases of pay for the Nautical Assistants. The Interdepartmental Committee, while of opinion that the present pay of the three Nautical Assistants was adequate for the duties demanded of them, left the consideration of their future pay and status to the new Director, since questions of organisation were involved.

1347 Omission of reports from Health Resorts from the Monthly Weather Report. (802193/38)

The Director reported that he had received a letter from the Member of Parliament for Exmouth asking that the reports from Exmouth, which was a "Health Resort", be re-inserted in the Monthly Weather Report.

The present policy, which was to limit the reports published in the Monthly Weather Report to those which were required for climatological purposes, had been laid down by the Committee in 1926 after the work of the Climatology Division had been examined by a Sub-Committee.

The Chairman said that he had asked the Director to defer his reply until the matter had been discussed by the Committee. As M.P. for a number of Health Resorts he felt very strongly that, since the publication of reports in the Monthly Weather Report had an advertising value, all Health Resorts should be treated alike.

The Director said that the distribution of the Monthly Weather Report outside Meteorological libraries at home and abroad, and the observers themselves was very small. Every five years the reports from Health Resorts were summarised and normals of sunshine, rainfall, etc. issued, and it was to these publications that reference was usually made by the newspaper press. To increase the size of the Monthly Weather Report would need Treasury sanction.

The Chairman retained his opinion that with the present policy Health Resorts had a legitimate grievance, and, after a general discussion proposed that a sub-committee be appointed to consider the general question. This was agreed. Meanwhile, the reports from Exmouth should be inserted in the Monthly Weather Report.

The following were nominated members of the sub-committee:

The Hydrographer

Sir D'Arcy Thompson

Mr. Nutt

President of the Royal Meteorological Society

The Director (Convener)

1348 Edinburgh Meteorological Committee. The Director reported that he had presided over a meeting of the Edinburgh Meteorological Committee on 29th June, 1938.

1349 Recruitment of Staff.

The Director reported that since the last meeting of the Committee, the following recruitments had been made:

Technical Officers	7
Assistants II	15
Assistants III	65
Observers	15

So far as requirements could be foreseen at present 39 forecasting officers and 100 assistants and observers were still to be appointed. These numbers included the staff required to implement the Maybury (Civil Aviation) scheme.

In view of the urgent need for staff, it was not possible to give more than six months training.

Professor Chapman commented on the expense of paying salary during the training period, adding that it would be cheaper for the training to be obtained at a University before appointment.

At this point the Under Secretary of State left the meeting and Sir Henry Lyons took the Chair.

1350 Opening of New Stations.

The Director reported that since the last meeting three new Type 1 stations on R.A.F. aerodromes had been opened, and two other Type 1 stations had been brought up to strength. At these 5 stations, which were at Group Headquarters, Bomber Command, no less than 30 forecasting officers were required.

Lecturers (Technical Officers) had been provided at the School of General Reconnaissance and the School of Air Navigation, and a Senior Technical Officer attached to the staff of the Air Officer Commanding in Chief, Bomber Command, as adviser in meteorological matters.

For Civil Aviation, stations had been opened at Heston and Ringway.

1351 Establishment of institutes for meteorological research at universities - suggestion by Royal Meteorological Society (756401/38

A letter, a copy of which was circulated to members, had been addressed by the Royal Meteorological Society to the Secretary of State for Air, drawing attention to the inadequacy of the provision in Great Britain for training and research in meteorological science, and proposing the foundation of institutes for such purposes. These was in fact only one full time professor of meteorology in the British Empire, namely at the University of London, and he had no assistant.

The Director said that in spite of the preoccupation of the staff with routine work, there was still a considerable amount of research being carried on, as evidenced by the Geophysical Memoirs and Professional Notes published every year. In the establishment sanctioned in 1935 provision was made for a pool of approximately 10% of each grade of the staff against which it was hoped that it would be possible to hold men while engaged on research; but in practice it had never been possible to use the pool for that purpose. It was always necessary to hold against the pool the new entrants in training, officers required as instructors, reliefs for sickness, R.A.F. exercises, etc. To be really effective, a pool for research should be composed of picked men who could be left at the work for long periods; but this was not possible because the best men would always be required for the normal work of the Office. He considered that the Universities were the right places for pure research.

Professor Chapman stated that the University of London was considering a draft scheme for the expansion of the professorship of meteorology into a Meteorological Institute. The University had not sufficient funds at their disposal for the purpose. He thought that there should be Meteorological Institutes at more than one University though not at all.

Discussion took place as to the best way of obtaining assistance from Government. If money were provided by Government it could either be through the University Grants Committee or direct through the Air Ministry.

Mr. Abraham suggested that if candidates could receive their training at a University before joining the Office a considerable saving would be effected and it might be possible to reduce the 10% pool to 5% and use this as an argument when approach was made to the Treasury for funds.

The Committee passed the following resolution which would be submitted to the Secretary of State for Air for use in his reply to the Royal Meteorological Society.

> The Meteorological Committee are strongly of opinion that Institutes attached to Universities for the purpose of study and research in meteorology are essential and recommend that Government assistance be provided for their establishment.

1352 Proposal to publish climatological normals for important cities of the world. (78939[illegible]/37)

The Director stated that many enquiries were received in the Office for data of climatological elements for all parts of the world. It would be convenient and a saving of labour if there were a publication to which enquirers could be referred. The Superintendent of the General Climatology Division had put up a proposal for the publication of a Geophysical Memoir of about 50 pages giving monthly and annual values of:

Temperature: maximum, minimum and mean.
Rainfall: amount and no. of raindays
Sunshine
Relative Humidity where available.

for about 250 stations comprising

(a) The capitals of important countries

(b) important business centres, e.g. Bombay, New York.

(c) chief health resorts; e.g. Nice, Davos, Madeira.

The Committee approved the proposal.

1353. Before leaving the meeting the Under Secretary of State referred to the fact that it was the last meeting of the Committee which Sir George Simpson would attend as Director and he wished to express his sense of the debt which the Royal Air Force and Civil Aviation owed to him and the Meteorological Office.

Sir Henry Lyons in closing referred again to Sir George Simpson's retirement and the Committee expressed their appreciation of his work through a difficult period. Sir Thomas Middleton (member of the Committee since 1907) and Sir D'Arcy Thompson mentioned particularly their admiration of the successful manner in which he had undertaken the office vacated by so eminent a scientist as Sir Napier Shaw. The Committee wished Sir George Simpson many years of health and happiness, with leisure for research.

In thanking the Committee for their congratulations and good wishes, Sir George Simpson said that he had thoroughly enjoyed his years of service as Director and now looked forward to continuing his work for meteorology without the restrictions of official life.

Notes on Item 13 of the Agenda - The Omission from the Monthly Weather Report of data from certain Health Resort Stations.

The following letter has been received from Mr. Cedric Drewe, M.P. :-

HOUSE OF COMMONS.

15th June, 1938.

Dear Sir,

You have recently been having correspondence with the Exmouth Urban District Council regarding the weather reports published in the Official Monthly Weather Report. The Exmouth Council do view this matter seriously as Exmouth is now an important seaside resort and they feel it is scarcely fair that it should not appear in the official records as the keeping of daily weather records and sending telegrams to the Meteorological Office entails considerable expense to the Council. They feel that it is unfair that adjoining seaside towns which are in the nature of competitors to Exmouth should obtain the publicity accruing from the publication of weather reports while Exmouth is excluded from the official publication. I hope, therefore, that in the near future you may be able to make some arrangement to meet their case.

Yours faithfully,

(Sgd.) CEDRIC DREWE.

In 1926 the Meteorological Committee had before them the necessity for keeping down the ever increasing work in the Climatology Division and they appointed a sub-Committee consisting of -

Sir Arthur Schuster (Chairman)
The Hydrographer (Captain H.P. Douglas R.N.)
Mr. H.V.W. McAnally, C.B.
The Director of the Meteorological Office

"to examine the work done in the Division and to advise whether it can be reduced so as to avoid the necessity of an increase of staff".

/Amongst the large

Amongst the large number of proposals discussed by the Sub-Committee was the following :-

> The Monthly Weather Report. - To cease to publish data from Health Resort stations which are situated in regions where we have sufficient other stations and not to accept returns from new private climatological stations if they are situated in localities for which we have sufficient climatological data."

After a long discussion of this proposal the Sub-Committee recommended :-

> E. - In the case of those climatological stations which are regarded as of minor importance by reason of the proximity of other stations, the Director be authorized at his discretion, to continue to receive the monthly returns of daily observations and to file them for reference without necessarily examining them or publishing summaries.

This recommendation was accepted by the Meteorological Committee at their meeting on the 25th November, 1926 (Minute 1039 E.). As the result of this resolution, several Health Resort stations were omitted from the Monthly Weather Report (Exmouth was one of the omitted stations) and since that date very few of the new stations entering the Health Resort scheme have been included in the Monthly Weather Report. In 1926, when the above resolution was passed, there were only 60 Health Resorts making weather reports; there are now 110 of which the reports from 66 are published.

If the reports from the remaining 44 stations were included, it would be necessary to increase the size of the Monthly Weather Report by a page and the work of the Climatology Division would be appreciably increased.

Note.

Health Resort Stations. The Health Resort Meteorological Service was started many years ago in an endeavour to ensure that meteorological data published in the newspapers are reliable. Any town which desires to avail itself of this service must establish at its own cost a meteorological station equipped with approved instruments and pay to the Meteorological Office £5 a year to cover the expense of sending annually an inspector to inspect the station. The observer at an approved Health Resort sends each afternoon a telegram giving the results of his observations. The observations are then included in a sheet which is supplied in the evening to the Press. Each newspaper publishes from this statement only the observations from those stations which they consider are of interest to their readers. Some stations also send a telegram in the morning and these are supplied to the newspapers in the same way by a sheet prepared during the morning. This service is a form of advertisement for the Health Resorts and 110 towns avail themselves of the facilities.

COPY.

Royal Meteorological Society,
49, Cromwell Road,
London, S.W.7.

March 23rd, 1938.

Sir,

We are instructed by the Council of the Royal Meteorologica Society to invite your attention to the inadequacy of the provision in this country of facilities for study and research in meteorologica science.

2. While there is a readership in meteorology at Oxford, one in electrical meteorology at Cambridge and a lectureship of astronomy and meteorology at Aberdeen, there is but one professorship in the United Kingdom (or even in the British Empire): namely, that at the Imperial College of Science and Technology, South Kensington, London. In spite of the enlightened attitude of the College, we understand that no funds have been available to provide the holder of this professorial post with a teaching assistant, and that the development of the department has been hampered by the lack of staff and equipment In recent years the professor's time has been very largely occupied in the fundamental training of students, with the consequent limitation of opportunity for directing and collaborating in research.

3. In countries comparable with our own, institutes for training and research in meteorology exist independently of the State meteorological service: e.g., in association with universities or institutions of similar character. The value of the work accomplished at such institutes is generally acknowledged not only by meteorologists but also by those interested in aviation.

It is probable that meteorology occupies a more prominent position in the universities of Germany than in those of any other country. There are large Meteorological Institutes, at which meteorology and allied geophysical subjects are studied, attached to the universities of Berlin, Frankfort-on-Main, Leipzig and Munich. At each of these there is a sufficiently numerous scientific staff to make it possible not only to give students a thorough training in meteorology, but also to carry out research into meteorological problems. There are, moreover, professors of meteorology at a number of other universities, among which may be mentioned those of Hamburg, Jena, Karlsruhe, Göttingen and Rostock, besides institutes for research into special aspects of meteorology at Braunschweig, Darmstadt and Eberswalde.

France has institutes for the study of the "Physique du Globe" in Paris and at the Puy-de-Dôme, while at the Institute of Hydromechanics at Lille very valuable work on anemometry and turbulence is being carried out.

In Norway there are the Geofysiske Institutt in Bergen and the Norske Institutt in Oslo. The most fruitful advance in meteorology in the present century is due to the Bergen school. Poland has four meteorological institutes, one at each of the universities of Posen, Wilno, Lemberg and Warsaw.

In the United States the meteorological departments at the Massachusetts Institute of Technology, Boston, at the California Institute of Technology, Pasadena, and at the Blue Hill Observatory of the Harvard University, are all actively engaged in investigations

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of various kinds; and the very valuable work which they have done during recent years has completely transformed American meteorological methods and bears tribute to the usefulness of institutions in which research into meteorological problems can be carried out.

4. The preceding survey of the activities in other lands is by no means exhaustive, but is perhaps a sufficient indication of the attitude towards meteorological research in a few of the leading countries. An institute for teaching and research in meteorology, attached to one of the universities in the United Kingdom, could perform as useful a function as any of the institutes which exist in other countries; and would, it is believed, induce a larger number of men of first-rate ability than at present to give serious attention to this field of work. Many, perhaps most, meteorological problems are of a complex nature; many are of immediate practical importance, others are of immediate theoretical but potential practical application. Some have direct bearing on the safety of aviation; others, such as the development of long-period forecasting, would affect the economic welfare of large sections of the community. An institute independent of the official meteorological service could undoubtedly do much to contribute to the solution of the various problems, of which there will be no lack for many years to come. In such an institute, moreover, it is possible (and desirable) to embark on investigations without considering too closely whether the results which may be obtained will be of immediate utility, in a way which is usually impracticable in an official service.

5. If such institutes were to be founded, the natural place for one would be in association with the existing professorship, at the Imperial College of Science and Technology. Such a location would be especially appropriate, in view of its proximity to the two principal meteorological libraries, those of the Meteorological Office and of this Society.

It is considered also that a centre of teaching and research should be established in Edinburgh where, in the Meteorological Office a library, records and general accumulated data are available. There is reason to believe that the universities in Scotland are greatly interested in this question, but have been unable to take the necessary initial steps on account of financial restrictions.

6. In the belief that you will share their conviction that this is a matter not only of intrinsic importance, but one in which it is highly desirable that early and adequate action should be taken to ensure that this country may no longer compare so unfavourably with others, the Council of the Society do most earnestly request you so to use your influence that the necessary provision may be made to achieve the ends described.

We are, Sir,
Your obedient Servants,

B. A. KEEN.
President.

E. L. HAWKE

H.W.L. ABSALOM.

Honorary Secretaries.

The Secretary of State for Air,
Air Ministry,
Adastral House,
Kingsway,
London, W.C.2.

DRAFT MINUTES

Air Ministry,
Adastral House,
London, W.C.2.

29th November, 1938.

METEOROLOGICAL COMMITTEE.

One hundred and fifty-ninth Meeting.

Present

Parliamentary Under Secretary of State for Air	(in the Chair)
The Director	Sir Henry Lyons
The Hydrographer	Sir Thomas Middleton
Mr. Abraham	Colonel Rossiter
Mr. Bigg	Mr. Schooling
Professor Chapman	Sir D'Arcy Thompson

Miss D.G. Chambers (Secretary)

An apology for absence was received from Mr. Rose

1354. The minutes of the meeting held on 5th July, 1938, were taken as read, confirmed and signed.

1355. Changes in Membership.

The Chairman welcomed Mr. N.K. Johnson who had succeeded Sir George Simpson as Director of the Meteorological Office and Mr. L.F. Schooling who had replaced Mr. Nutt as Head of F.3 on the latter's retirement from the Service.

The Secretary was instructed to send a letter to Mr. Nutt expressing the Committee's appreciation of his services.

1356. Retirement of Assistant Directors and appointment of successors (Minutes 1279, 1303, 1315, 1332, 1345).

Referring to Minute 1345 the Director informed the Committee that the Sub-Committee nominated at the 157th Meeting had met again and made recommendations for filling the two vacancies which would be caused by the retirement of Mr. Lempfert on the 31st December, 1938, and Dr. Whipple on 31st March, 1939. The names put forward were

R. Corless, O.B.E., M.A.
A.H.R. Goldie, M.A., D.Sc.

The recommendations had been accepted.

The Director further stated that he had taken the opportunity offered by the appointment of two new Assistant Directors to effect some re-organisation in the duties of all three Assistant Directors. The work of the office could be divided under four headings: Synoptic meteorology, Research, Climatology and Ancillary work (i.e. the supply of personnel, instruments, buildings etc.) To ensure a complete chain of responsibility and provide a filter to himself, he proposed to group the Divisions under the Assistant Directors thus:-

1. Synoptic (Home and Overseas) including international synoptic organisation.

2. Climatology and Ancillary work.
3. Research and Observatories.

Further he had put forward a proposal for the strengthening of the present Synoptic Division which had become much too large for one Principal Technical Officer. He proposed to split the Division and form a new and separate Division for dealing solely with R.A.F. requirements.

In reply to the Chairman's question, Mr. Abraham stated that he anticipated no difficulty in obtaining sanction for the increased staff required.

In the course of a general discussion on the research to be undertaken by the Office, the Director stated that he had already taken steps to draw up a list of the problems requiring solution, and when these had been classified by subjects, they would need to be arranged in order of priority. He was able to assure the Chairman that Civil Aviation problems would not have to take second place; many problems were common to both Civil and Service Aviation. Professor Chapman, while expressing the view that the trend of the Director's proposals was excellent, thought that the Office should receive advice from a body of pure scientists on its research programme. The Director welcomed the suggestion and the Committee unanimously approved it. The Chairman therefore asked the Director to put forward a proposal for the formation of a Meteorological Research Committee to act as an advisory Committee to the Meteorological Office.

Sir D'Arcy Thompson, speaking from the professorial point of view, confessed himself doubtful whether a Government Department could successfully undertake research. The method of staffing, the stress of routine duties, and the absence of that complete freedom necessary for the flow of ideas were great hindrances. This point led to the question of research being undertaken in the Universities, which formed the subject of a separate item on the agenda. (See Minute 1357)

1357. **Establishment of Institutes for Meteorological Research at Universities (Minute 1351)**

The Director reported that, as a result of the decision taken at the last meeting of the Committee, a reply had been sent to the Royal Meteorological Society's letter to the effect that the Air Ministry would support an appeal to the Government for funds for the purpose of establishing meteorological institutes at Universities. The pure research on which the progress of meteorology depended would be done at these institutes, and would be complementary to the applied research which must of necessity be carried out in the Office. Besides undertaking research, such institutes would provide training grounds for future members of the Office staff. The view was expressed that it would be sufficient, in the first instance at least, if one or at most two such institutes were formed. The next move rested with the Universities to put forward their proposals.

Professor Chapman said that London University had a professorship of meteorology, and a scheme had already gone to the University authorities for the establishment of a Meteorological Institute at South Kensington. He foresaw a possible financial difficulty in that it might not be considered appropriate that the money required for an Institution which would benefit the Air Ministry should come from the general education fund of the country. As a means of furthering the matter with the University authorities the Chairman asked the Director if he would get into touch with Sir Henry Tizard and urge the interest of the Air Ministry.

1358. **Marine Division: Appointment of Superintendent to succeed Captain Brooke Smith. (Minute 1346).**

Mr. Abraham stated that, following the strong recommendation of the Committee at their last meeting, a higher minimum salary had been sanctioned for the post; the scale offered being £750-£850. The Selection Board, which included the Director and Captain Ellery, had considered a short list of 16 applications and interviewed 9 candidates. The Board's recommendation had not yet received final confirmation.

1359. **Publication of Health Resort Data in the Monthly Weather Report. (Minute 1347).**

The Director reported that the Sub-Committee had been convened in accordance with the instructions of the Committee. They had before them a memorandum on the subject prepared by the Superintendent of the British Climatology Division. After careful consideration of the facts, the Sub-Committee reached the following conclusions:-

(a) The decision to omit certain Health Resorts from the Monthly Weather Report in 1926 was based mainly upon considerations of the requirements of academic climatology.

(b) The Monthly Weather Report possessed a small but definite publicity value to Health Resorts, the names of which were included in it.

(c) The value of the Monthly Weather Report would be increased as a source of information for general purposes if it included all stations of real importance either as Health Resorts or residential centres.

(d) The inclusion of the stations just mentioned (c) could be effected in such a way as to avoid any additional printing costs, but it would necessitate increasing the staff in the British Climatology Division by one clerical assistant.

(e) It was undesirable to increase the charges now made to Health Resorts in respect of this service.

Recommendation.

Having regard to the importance of avoiding preferential treatment as between various Health Resorts, and in view of the increased value which the Monthly Weather Report would acquire for general purposes, the Sub-Committee recommended that the Monthly Weather Report should in future include data from all stations of real importance as Health Resorts.

The Committee accepted this recommendation.

Mr. Abraham said that the cost of a Clerical Assistant was a small sum to pay for the increased value of the Monthly Weather Report and foresaw no difficulty in that direction.

The Chairman thanked the Sub-Committee for their work and asked the Director to initiate the necessary Departmental action to comply with their recommendation. (Report of Sub-Committee attached - Appendix I).

1360. Meteorological Requirements of Civil Aviation: "Maybury" Scheme.

The Director reported that the Treasury had given general approval to the meteorological organisation which the implementation of the Maybury Committee's recommendations would entail, stipulating that staff should only be recruited as actually required. The total staff required numbered 195, the number of stations being 25. D.G.C.A. had provided a programme, and a joint priority list of R.A.F. and Civil stations had been prepared in collaboration with R.A.F. and Civil Aviation authorities.

1361. Royal Air Force Reserve: Meteorological Section.

The Director stated that in the event of war the Office would be called upon to provide about 120 officers and 340 men for service with the Royal Air Force going overseas and to strengthen the home stations. Shortly before he left Sir George Simpson had outlined a scheme for the formation of a meteorological section of the Royal Air Force Volunteer Reserve. Evening training would be given at a number of town centres (a start being made in London) and a fortnight's continuous training at a Royal Air Force Meteorological Station. Two Technical Officers would be required for recruiting and training at each centre and a Senior Technical Officer at Headquarters for organisation and administration. Details had been worked out and the scheme was now nearly ready for presentation to the Treasury. Some propaganda in the press would probably be necessary when the scheme had received sanction.

Sir D'Arcy Thompson mentioned the large body of rainfall observers who might be expected to provide suitable candidates for such training. Professor Chapman referred also to the indexes of University graduates which existed at most Universities and thought it would be worth while circularising these in view of the large number of claims likely to be made on University-trained men.

The Chairman asked that the Committee be kept informed of the progress of the scheme.

1362. Recruitment of Staff.

The Director reported that since the last meeting of the Committee recruitment had been made to the staff as under:-

Technical Officers	7
Assistants II	15
Assistants III	26
Observer	1

In addition, as a result of recent Selection Boards, it was hoped to recruit:-

Technical Officers	12
Assistants II	14
Assistants III	25

There had been a small wastage, almost entirely confined to Assistants III who transferred to other Government Departments. He added that the field for Technical Officers had been widened by raising the age limit and sanction had been given to a higher commencing salary for men with exceptional qualifications. He was arranging with Press and Publicity Section for some propaganda drawing attention to meteorology as a career.

The Chairman said that when visiting meteorological stations on Civil Aerodromes his attention had been called by the staff to their feeling of insecurity owing to their liability for transfer at any time. He thought that if married men, particularly, could be given a guarantee that they would stay in one place for a certain length of time it would tend to ease the situation. The Director promised to look into the matter.

1363. Opening of new stations.

The Director reported that since the last meeting 20 stations had been opened at R.A.F. aerodromes. At present the numbers stood as follows:-

	No. of Stations already opened.	No. of Stations sanctioned still to be opened.	No. of additional stations likely to be required but not yet sanctioned.
R.A.F.	53	30	25
Civil	5	20	-

The Chairman asked that the Committee should be informed of the position so far as the working programme was concerned.

Sir D'Arcy Thompson asked for a list of stations already opened to be added to the minutes. (Appendix II).

The Under Secretary of State here left the meeting and Sir Henry Lyons took the Chair.

1364. Sketch Estimates 1939/40.

The Sketch Estimates with explanatory notes had been circulated. (Appendix III).

The Director stated that the main increase was in the figure for salaries which had been made large enough to cover all the staff which could reasonably be expected to be recruited. He had not altered the figure for Research (£3,000) because he was not yet in a position to say what it should be.

Professor Chapman asked whether the Air Ministry were precluded from employing foreigners. Having regard to the fact that there was such a dearth of technical men and that there were many good men amongst refugees he thought that the Department might make use of them in places where there was no danger of their being able to obtain access to official secrets.

Mr. Abraham stated that present regulations excluded all but children of natural-born British subjects from the Civil Service. He did not think that the obstacle was insuperable however; approach might be made to the Treasury in any particular case.

Professor Chapman said that he would much prefer the question to be considered generally but Mr. Abraham thought it most unlikely that consideration would be given to any alteration in the regulations.

The Director said that he was hoping to be able to hand out certain technical problems to the Universities which the men Professor Chapman had in mind might be able to undertake. He thought that they would be more appropriately attached to the Universities than employed in a Department.

1365. At this point Mr. Abraham was summoned from the meeting. Before leaving he told the Chairman that as he was vacating the Office of Principal Establishment Officer at the end of the year he would then cease to be a member of the Committee. He had enjoyed the meetings of the Committee and was sorry not to be able to continue his association with its work. The Committee expressed their sincere regret at the loss of Mr. Abraham's services: his assistance and advice had been of great value.

1366. Meeting of the International Regional Commission at Monte Video, February, 1939.

The Director reported that in connexion with the development of Civil Aviation in the Southern Hemisphere, and in particular the air service to South America, a meeting was being held in Monte Video to discuss the establishment of a meteorological organisation on similar lines to that in Europe and America. The President of the Commission had asked the British Meteorological Office to send a representative with experience of setting up such an organisation, and it had been decided to send Mr. Entwistle who last year attended a similar Conference in New Zealand.

The new aviation service would entail the establishment by Great Britain of synoptic meteorological stations on St. Helena and Ascension. South Africa had agreed to be responsible for Tristan da Cunha.

Mr. Bigg said that the Colonial Office had been informed of the Conference by the Foreign Office but did not intend to arrange for delegates from British Guiana or Jamaica unless pressed to do so. The Director did not think that those Services need be represented at the meeting at Monte Video, which was merely a preliminary conference.

1367. Dates of Meetings in 1939.

The following dates were agreed upon: it would be necessary to hold the meetings scheduled for July and November; unless however any matters of importance arose the other dates would probably be cancelled.

January 17th	July 4th
March 21st	September 19th
May 16th	November 21st.

Appendix I.

METEOROLOGICAL COMMITTEE.

Minutes of 159th meeting.

Report of the Sub-Committee on the inclusion of Health Resort data in the Monthly Weather Report.

The Sub-Committee met at 11.30 a.m., 29th November, 1938.

There were present:

The Director (Convener and Chairman)
The Hydrographer
Sir D'Arcy Thompson.

Mr. Bilham, Superintendent, British Climatology Division of the Meteorological Office, and Mr. Tucker, S.5, also attended.

An apology for absence was received from Dr. Keen, President of the Royal Meteorological Society.

I. Present position.

1. A memorandum setting out the position, prepared by Mr. Bilham, had been circulated to the members. The 1923 decision to reduce the number of Health Resort stations in the Monthly Weather Report had been inspired by the necessity to reduce the work, and therefore the running costs, of the Climatology Division. The present criterion for inclusion of data from Health Resorts in the Monthly Weather Report was that of their value from a climatological point of view.

2. Further elaboration of the memorandum by Mr. Bilham brought out the following facts:

(a) Protests, similar to that from Exmouth which had given rise to the consideration of the matter by the Meteorological Committee, had arisen from time to time showing that there was general feeling amongst the Health Resorts that there was an invidious distinction between them.

(b) The Health Resort stations did not differ from voluntary climatological stations in their equipment; they were more closely under control than the latter and by virtue of the fact that they were mostly run by municipal authorities were more likely to be permanent than voluntary stations and in that respect were more valuable.

(c)/

(c) The data from Health Resorts were much in demand for answering inquiries, particularly from legal and insurance firms who required certified statements and from geography students who often required data for a close network of stations over a limited area. Even though not published, therefore, the data from Health Resorts had to be examined and checked before the returns were filed; and when the Monthly Weather Reports did not include all the data asked for by an inquirer, they had to be supplemented by copying from the MS. returns. The data from all Health Resorts were used in the preparation of the five-yearly averages. The saving of work on the Monthly Weather Report was therefore partly offset by work in other directions.

II. Publicity value of the Monthly Weather Report.

Although of the 950 copies of the Report printed more than half were presented to contributing observers and the remainder sold to Fellows of the Royal Meteorological Society or members of the public, the data in the Report sometimes gave rise to articles and discussions in the press. This constituted a definite, even though small, publicity value to the stations which were included.

III. Cost.

The inclusion of all Health Resort data would necessitate about another page of tables. At present the maps were lithographed on to a sheet which was pasted into the Report: if the complete maps were drawn in the Climatology Division they could be reproduced by photolithography on the same paper as the rest of the Report and a double sheet introduced into the Report. The only additional cost in the production of the Report would then be the cost of the additional typing, a negligible amount.

An additional Clerical Assistant would be required for the work of preparation for the press.

IV. Increased Charges to Health Resorts.

It was agreed that there would be no justification for increasing the fee of £5 which was the charge made to Health Resorts for the annual inspection of their stations.

V. Recommendation.

Having regard to the importance of avoiding preferential treatment as between various Health Resorts, and in view of the increased value which the Monthly Weather Report would acquire for general purposes, the Sub-Committee recommended that the Monthly Weather Report should in future include data from all stations of real importance as Health Resorts.

METEOROLOGICAL COMMITTEE

APPENDIX II

MINUTES OF 159th MEETING

AVIATION METEOROLOGICAL STATIONS IN GREAT BRITAIN ROYAL AIR FORCE AND CIVIL AVIATION.

(Civil Aviation Stations marked *)

ANGLESEY
- Holyhead

ANGUS
- Montrose

ANTRIM, N. IRELAND
- Aldergrove

BERKSHIRE
- Abingdon
- Harwell

BUCKINGHAMSHIRE
- Cranfield

CAMBRIDGESHIRE
- Duxford

CHESHIRE
- Ringway *

DEVONSHIRE
- Mount Batten

DURHAM
- Usworth

ESSEX
- Hornchurch
- Northweald

FIFESHIRE
- Donibristle
- Leuchars

FLINTSHIRE
- Sealand

GLOUCESTERSHIRE
- Bristol *

HAMPSHIRE
- Calshot
- Farnborough
- Hythe *
- Thorney Island

HERTFORDSHIRE
- Bassingbourn

HUNTINGDONSHIRE
- Upwood
- Wyton

KENT
- Biggin Hill
- Chatham
- Lympne*
- Manston

LANCASHIRE
- Manchester *

LINCOLNSHIRE
- Cranwell
- Digby
- Grantham
- Hemswell
- Scampton
- Waddington

MIDDLESEX
- Heston *
- Uxbridge

NORFOLK
- Bircham Newton
- Feltwell
- Marham

NORTHAMPTONSHIRE
- Wittering

NOTTINGHAMSHIRE
- Hucknall

OXFORDSHIRE
- Upper Heyford

PEMBROKESHIRE
- Pembroke Dock

RENFREWSHIRE
- Abbotsinch

ROSSHIRE
- Evanton

RUTLAND
- Cottesmore

SHROPSHIRE
- Ternhill

SUFFOLK
- Felixstowe
- Mildenhall
- Stradishall

SURREY
- Croydon *
- Kenley

SUSSEX
- Tangmere

WILTSHIRE
- Boscombe Down

YORKSHIRE
- Catterick
- Church Fenton
- Dishforth
- Driffield
- Finningley
- Leconfield
- Linton-on-Ouse
- Thornaby

APPENDIX III

MINUTES OF THE 159th MEETING OF THE METEOROLOGICAL COMMITTEE.

METEOROLOGICAL OFFICE.

ESTIMATES (SKETCH) 1939.

VOTE 9 : SUBHEADS A - J.

VOTE 9	SERVICE		
	Expenditure	1939 £	1938 £
A	Salaries, Wages etc. of staff at Headquarters.	67,000	65,000
B	Salaries, Wages etc. of staff at Observatories and Outstations.	153,000	123,000
C 1	Fuel, Light and Water	800	800
2	Transportation	12,000	12,000
D 1	Instruments, Equipment and Stores	35,000	30,000
2	Research	3,000	3,000
E	Works, Buildings and Rents	35,000	31,500
F	Telephone and Telegraph services, Payments to Observers etc.	67,000	62,400
G	Grants towards Meteorological Services for Empire Air Routes.	26,000	28,000
H	Superannuation	700	800
		£399,500	£356,500
		£	£
	Appropriations-in-Aid :		
J 1	Contributions from Navy and Army Votes in respect of meteorological services	9,000	9,000
J 2	Sale of Instruments	15,000	10,000
J 3	Fees for Inspections, Data etc.	2,900	2,900
J 4	Royal Society	600	600
		£27,500	£22,500
	Net	£372,000	£334,000

METEOROLOGICAL OFFICE

Notes on the Sketch Estimates for Vote 9 (1939).

Sketch Estimates for Vote 9 (1939) show an increase of £38,000 over the figures for 1938. The main increases are explained as follows :-

Expenditure :

9A and B - Salaries and Wages :

£32,000 of the total increase is under this subhead and is mainly due to provision taken for additional staff.

9 D/1 - Instruments and Equipment :

The increase of £5,000 arises mainly from provision for increasing the stock of instruments and equipment to form a reserve in case of emergency. The amount provided for special meteorological equipment for H.M. Ships is increased by £2,500 (recoverable under 9 J/2) but there is a reduction of a similar amount in the provision taken for special equipment at stations at home.

9 E. Works Services :

The sum allocated to the provision of meteorological buildings on Empire Air Mail routes is increased by £3,000 and £4,000 additional is taken for the installation of cloud searchlights and other equipment at home stations. The provision for meteorological buildings at home is less by £3,000 the net increase under the subhead being £3,500.

9 F. Telegraphic, Telephonic and Miscellaneous :

The increase under this subhead is £4,600 the only large item being the provision of £4,000 additional for increased traffic in telegraphic and wireless weather reports and forecasts.

Appropriations in Aid :

The amount estimated as recoverable by the sale of instruments (under 9 J/2) is greater by £5,000 in view of an anticipated increase in the quantity supplied to the order of the Admiralty.

DRAFT MINUTES

Air Ministry,
Adastral House,
London, W.C.2.

4th July, 1939.

METEOROLOGICAL COMMITTEE.

One hundred and Sixtieth Meeting.

Present

Sir Thomas Middleton (in the Chair)
The Director
Mr. Bigg
Professor Chapman
Mr Clements
Captain Marshall
Colonel Montague
Mr Rose
Sir D'Arcy Thompson
Miss D.G. Chambers (Secretary)

The Under Secretary of State was prevented from taking the chair by another meeting which he was obliged to attend. Apologies for absence were received also from Sir Henry Lyons, the Hydrographer and Mr. Nott-Bower.

The minutes of the meeting held on 29th November, 1938 were taken as read, confirmed and signed.

Changes in Membership.

The following changes in the membership of the Committee were recorded:

Captain T.P. Marshall, Principal Examiner of masters and mates, Board of Trade, replacing Captain Ellery, retired.
Captain Ellery had been a member of the Committee since 1925.

Colonel P.A.J. Montague, M.C., Superintendent of Experiments, Shoeburyness, replacing Colonel Rossiter.

Mr. W.G. Nott-Bower, C.B.E., Principal Establishment Officer, Air Ministry, replacing Mr. Abraham.

Mr. W.G. Clements, M.C., Head of F.3, Air Ministry, replacing Mr. Schooling who had only attended one meeting.

The Chairman welcomed the new members and the Committee asked that letters of thanks and appreciation should be sent to the retiring members.

Edinburgh Meteorological Committee.

The minutes of the annual meeting held on 7th June, 1939 over which the Director had presided, had been circulated for information.

Re-organisation of the Meteorological Office.

The Director reported that the rapid expansion of the Office in recent years had necessitated a re-organisation, in particular the duties of the Assistant Directors. The new organisation, which had been brought into operation on 1st January, 1939, grouped the Divisions into three Sections, each in charge of an Assistant Director:- Synoptic, Climatology and Ancillary, Research and Observatories: all three Assistant Directors would, in future, be at Headquarters.

The Forecasting and Aviation Division had been divided in two, one division dealing with Headquarters forecasting and the meteorological requirements of Civil Aviation, and the other with the requirements of the Royal Air Force.

In addition he had examined carefully the staff complements of the Divisions and put forward proposals for increases of staff (in number about 50), and provided for an adequate deputy for each Superintendent. He had not yet had the opportunity of examining the work and staffs of the Observatories but hoped to be able to do so before the end of the year. At Kew Observatory certain adjustments of staff were being made in advance of the preparation of the general scheme.

Staff.

(a) Retirements: The Director reported the retirement of the following senior staff.

Mr. R.G.K. Lempfert,	Assistant Director,	on	31.12.38.
Mr. F.J.W. Whipple,	"	"	31. 3.39.
Captain L.A. Brooke Smith,	Superintendent,	"	3.12.38.
Mr. J.S. Dines,	"		30. 6.39.

This loss of accumulated experience had coincided with a series of international crises and the Director recorded his appreciation of the hard work and loyalty of the staff which had carried the Office through the difficult period.

(b) Promotions. The following promotions had been made on the recommendation of the sub-committee:-

Mr. H.W.L. Absalom, acting Principal Technical Officer, to take charge of the new Royal Air Force Division, 1.1.39.

Mr. J. Durward, Principal Technical Officer, to take charge of the Edinburgh Office on his return from secondment to Iraq, in November, 1939.

Dr. J.M. Stagg, acting Principal Technical Officer, to take charge of Kew Observatory, 1.4.39.

Dr. F.J. Scrase, acting Principal Technical Officer, to take charge of the Instruments Division, 1.7.39.

(c) Appointment.

Captain C.E.N. Frankcom had been appointed Superintendent of the Marine Division, 16.1.39.

Annual Report of the Director, 1938/39.

The Report had been circulated in proof, and after a number of verbal alterations, was accepted by the Committee.

Meteorological Research Committee. (Minute 1356.)

The Director reported that following the proposal made by Professor Chapman and adopted by the Committee at their last meeting, he had prepared a scheme which had been approved by the Secretary of State. The functions and composition proposed for the Research Committee were as follows:-

1. Functions.

The Meteorological Research Committee to be a technical advisory body responsible for the following duties:-

(a) To advise the Secretary of State for Air as to the general lines along which meteorological research should be developed.

(b) To advise and assist in the carrying out of investigations and research within the Meteorological Office.

(c) To receive reports upon meteorological investigations carried out in the Meteorological Office or on behalf of the Air Ministry and to make recommendations for further action.

(d) To co-ordinate the investigations performed in the Meteorological Office with related activities carried out elsewhere, both in this country and abroard.

2. Composition.

The Meteorological Research Committee to consist of:-

(a) A Chairman.

(b) Not more than four Scientist Members to be obtained from outside the Air Ministry Service. These to be eminent in meteorology or a related branch of science and at least one to be a Member of the Meteorological Committee also.

(c) The Director of the Meteorological Office.

(d) A representative of the Admiralty.

(e) A representative of the Air Staff.

(f) A representative of the Director General of Civil Aviation.

The Chairman and the Scientist Members referred to under (b) to be nominated by the Secretary of State. Secretaries to be provided from the Staff of the Meteorological Office.

The scheme also provided for honoraria to the Chairman and scientist members of the Committee but the Treasury had not sanctioned the payment of remuneration, using as a precedent the Cancer Research Committee on which eminent doctors served without fee.

The Director pointed out that scientist members of the Aeronautical Research Committee, an analogous Committee, received remuneration and he felt strongly that it was not equitable to ask the same scientists to give their services to the Meteorological Research Committee without compensation. The time spent at the actual meetings represented a small fraction of the time they would devote to the problems presented.

Professor Chapman wished to make it clear that when putting forward his proposal, no question of fees had entered his mind. He hoped that the formation of the Committee would not be held up because of it and expressed the opinion that the lack of fees would not prevent the co-operation of the scientists.

He further emphasised the necessity for the Committee by drawing attention to a paragraph in the Annual Report for 1938/39 which made mention of the Finnish radio-sonde instruments which it had only just been decided to purchase for use and trial in this country. The Committee, had it existed, would have recommended their use much earlier and so have pushed forward an investigation vital to the needs of the Royal Air Force.

After discussion the Committee put on record their regret at the delay in the formation of the Research Committee and recommended that further application be made to the Treasury asking for a reconsideration of the decision regarding the payment of fees, suggesting also that mention be made of specific problems on which the Committee could be of assistance.

1375 **Establishment of Institutes for Meteorological Research.**

The Director reminded the Committee that at the last meeting he had been instructed to get into touch with Sir Henry Tizard in the matter. Almost simultaneously he was approached by the University Grants Committee to whom the Board of Education had passed the circular letter received from the Royal Meteorological Society.

At the request of the University Grants Committee he attended a meeting of a sub-committee of that Committee which had been appointed to examine the question. He had supported strongly the proposal to establish at least one Meteorological Institute, but at the same time he had pointed out that care must be taken not to flood the market with meteorologists whom the Meteorological Office could not absorb.

He understood that the University Grants Committee had decided to strengthen and assist the study of meteorology at the Imperial College at once and to wait for two or three years and watch results before making further provisions at any other University.

He added that an Assistant Lecturer had already been appointed to Professor Brunt and he understood that provision was being made for a number of post-graduate studentships and for the establishment of a laboratory for meteorological work.

1376 **Publication in Monthly Weather Report of data from Health Resorts (Minute 1359).**

The Director reported that the recommendations contained in Minute 1359 had been carried out and exhibited copies of the current Monthly Weather Report showing the changes which had been made.

It was noted that the maps now reproduced by photo-lithography in black and white were not so satisfactory as those in colour. This was partly due to the shading which was not naturally graded. The Committee asked that an effort should be made to alter the system of shading so that the essential features of the map would be obvious without reference to the scale. If this was not possible, consideration should be given to a return to the old style of reproduction in colour.

The Director undertook to take up the matter.

1377 **Opening of Stations.**

Twenty-three new stations had been opened on Royal Air Force aerodromes since the last meeting, and a Senior Technical Officer attached to Coastal Command Headquarters.

One station only had been opened on a Civil Aerodrome.

1378 Recruitment of Staff.

Since the last meeting the following staff had been recruited:-

Senior Technical Officer	1
Technical Officers	27
Assistant II	35
Assistant III	85
	148

With the exception of the Senior Technical Officer all these men had to be specially trained and for this purpose training classes were running continuously.

1379 Royal Air Force Volunteer Reserve - Meteorological Section.

The Director reported that the scheme for establishing a Meteorological Section of the R.A.F.V.R. had been announced publicly on 12th May, 1939. The scheme involved the formation of an Overseas Contingent which was to be staffed by regular members of the Meteorological Office. It also entailed the recruiting of a sufficient number of civilians to replace the regular staff who went overseas and also to augment the R.A.F. stations at home to enable them to function continously day and night. The response which had been received was indicated by the following table which showed the position on 13th July, 1939:-

Meteorogical Office Staff	Number Required	Applications
Officers	40	108
Other Ranks	98	30
Outside		
Officers	85	244
Other Ranks	242	223

Arrangements were being made to commence the evening instructional classes immediately after the summer holiday period.

1380 International Meetings.

A statement was circulated enumerating the various international meetings during the year to be attended by representatives of the Meteorological Office. (Appendix I)

1381 Supply of Daily Weather Reports to Training Ships.

Captain Marshall raised the question of the free issue of Daily Weather Reports to the S.S. "Arethusa" and S.S. "Warspite" training ships of the Merchant Navy, about which there had been some difficulty. The Committee recommended that if possible a free issue of the Daily Weather Reports be made to these ships, The Director undertook to look into the question.

1382 Supply of Weather Telegrams to Fishing Ports.

Captain Marshall asked whether it would not be possible for the Meteorological Office to issue special telegrams to certain trawling ports giving greater detail than the usual Gale Warning telegrams. It was agreed that this was a matter for the consideration of the Gale Warning Board, to whom Captain Marshall agreed to refer it.

Appendix I.

METEOROLOGICAL COMMITTEE

Meeting to be held on 4th July, 1939.

Item 13.

International Meetings: Meetings of various international bodies have been, or will be, attended by members of the staff of the Office, as follows:-

1. International Meteorological Organisation - Regional Commission III (South America):

   Monte Video, February 2nd - 10th, 1939, attended by Mr. F. Entwistle.

2. International Aeronautical Conference:

   Cracow, May 15th - 20th, 1939 attended by Mr. E.G. Bilham.

3. International Meteorological Organisation:

   Berlin, June, 1939:-

   (a) Maritime Commission, June 5th - 7th attended by Mr. F. Entwistle and Captain C.E.N. Frankcom.

   (b) Commission for Aeronautical Meteorology, June 8th - 15th, attended by Mr. E. Gold, Mr. F. Entwistle (Secretary) and Mr. E.G. Bilham. Mr. C.D. Stewart attended at the request of the Colonial Office to represent Malaya.

   (c) Aerological Commission, June 16th - 20th, attended by Dr. J.M. Stagg.

   (d) International Meteorological Committee, June 21st - 25th, 1939, attended by the Director and Sir George Simpson. Mr. C.D. Stewart attended at the request of the Colonial Office to represent Malaya.

4. Internal Union of Geodesy and Geophysics - General Assembly: Washington, September 4th - 15th, 1939. Will be attended by the Director, Dr. A.H.R. Goldie and Dr. J.M. Stagg.